

MACWORLD

May 1988 \$3.95

Canada \$4.95

The Macintosh Magazine

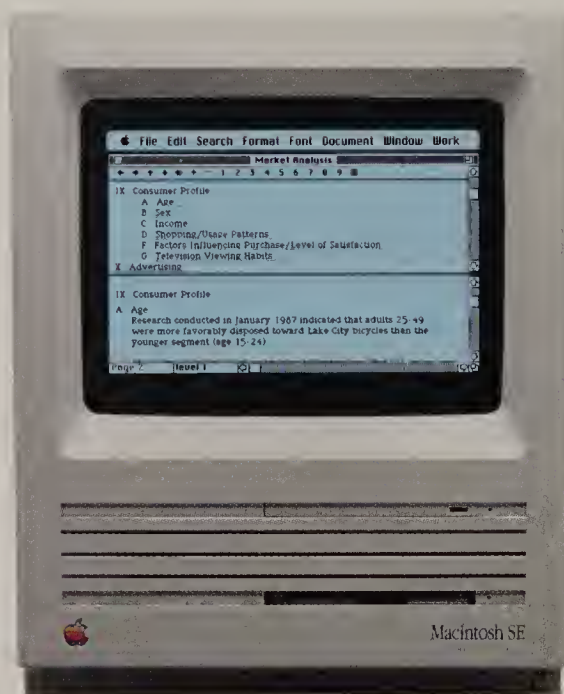
Choosing the Best
**Big-Screen
Monitor**

*Gray-scale and monochrome,
tested and compared*



Hurry up and

Whether it's a two-page letter or a 100-page report, the whole point of writing is to get to the point. And nothing gets you there faster than Microsoft® Word, Version 3.



Moving an outline heading moves its associated text. So you can not only organize your thoughts, you can quickly rearrange your words, too.

That's because Word is not your ordinary word processor. In fact, it's not a word processor at all.

Word is the Macintosh™'s first document processor.

And it's specifically designed to take you from outline to output, without getting you bogged down in details.

That's why you'll find a combination of powerful features in

Word you won't find anywhere else.

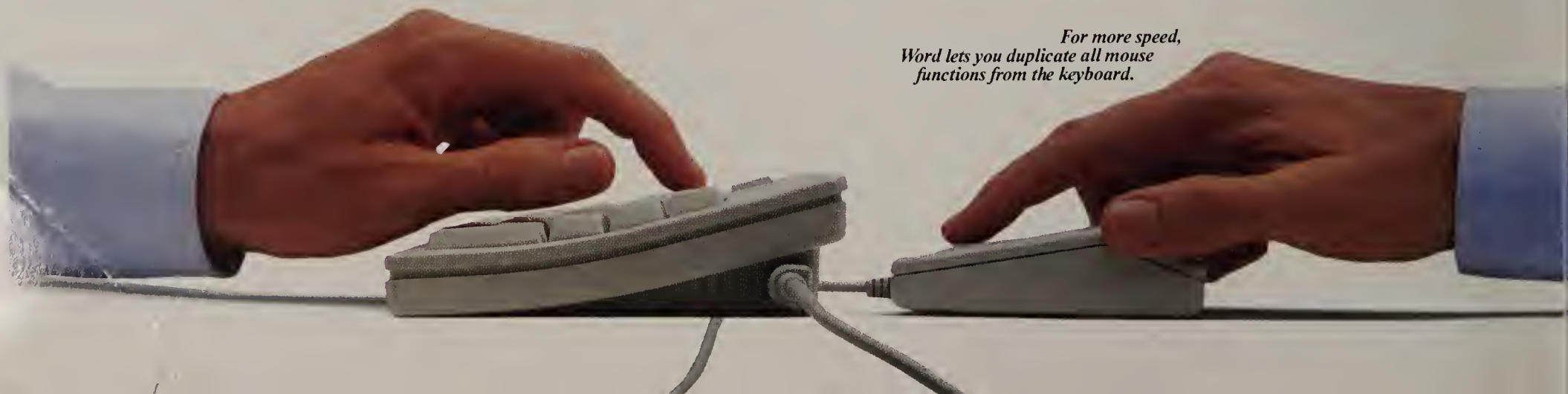
Like an integrated outliner for organizing your thoughts. And for rearranging pages of paragraphs with a simple click of the mouse.

Likewise, a simple mouse click is all you need to check and correct your spelling, using Word's built-in, customizable 80,000-word dictionary.

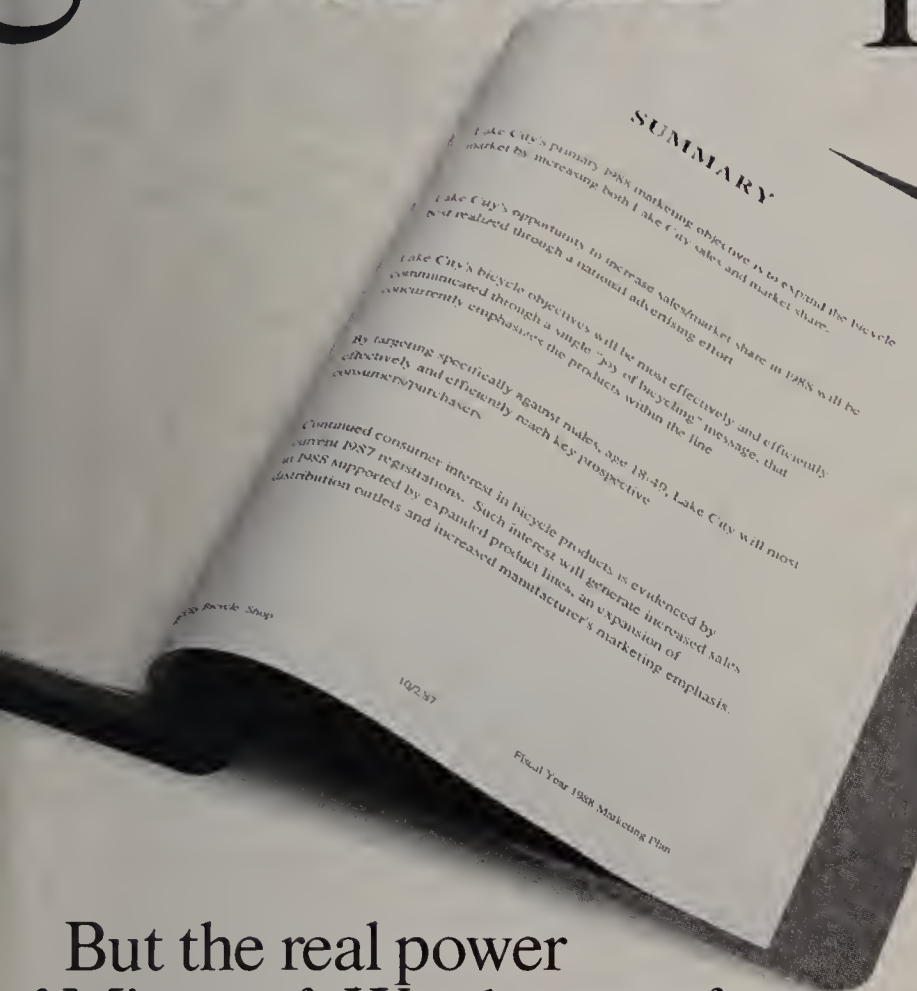
Plus you can preview and adjust page layouts before you print. Customize menus, so the files, fonts and formats you need are always at hand. Even assign Word the time-consuming chore of generating a complete index and table of contents.

All critical, professional features that strip hours off the task of turning rough thoughts into crisp, persuasive documents.

*For more speed,
Word lets you duplicate all mouse
functions from the keyboard.*



get to the point.



But the real power of Microsoft Word comes from the major time-saving features available while you input, edit and format your work.

Advanced features, like command and accelerator keys, that

highest concentration of owners in a single age group with 12.7 percent. The combined age group of 25-54 accounted for the greatest concentration of total bicycle sales with 55.4 percent.

Relative to population in each age group, sales indicate that there is above average interest in bicycle products in the 15-44 age categories. Sales are relatively lower, at 27.6 percent, for the younger segment (age 15-24); this is significant given the fact that the population in this segment is almost half that of the 25-49 segment.

The discrepancy between the information from Lake City's warranty registrations and the current research finds may be due to the following:

ated that the 20-24 age group had the highest concentration of own a single age group with 12.7 percent. The combined age group of 25-54 accounted for the greatest concentration of total bicycle sales with 55.4 percent.

Relative to population in each age group, sales indicate that above average interest in bicycle products in the 15-44 age categories. Sales are relatively lower, at 27.6 percent, for the younger segment (15-24); this is significant given the fact that the population in this age is almost half that of the 25-49 segment.

The discrepancy between the information from Lake City's warranty registrations and the current research finds may be due to the following:

- Lake City's warranty information may not reflect accurate information regarding the purchaser
- The owner/buyer may not be the primary user of the vehicle
- The mail survey technique used for the current research may have been biased toward older respondents

Microsoft Word 1.02/57 Fiscal Year 1988 Marketing Plan

Lake City Bicycle EP12/87 Fiscal Year 1988 Marketing Plan

With style sheets, you can change from one format to another with just a click of the mouse.

duplicate every mouse function while you keep your hands on the keyboard. Glossaries, for recalling frequently used text with a few rapid keystrokes. Style

sheets, for saving and reusing type styles and formats with a simple point and click.

And obvious, but often overlooked time-savers, like the ability to select words, sentences or whole paragraphs at the touch of a button.

What can Word do for you? The answer can

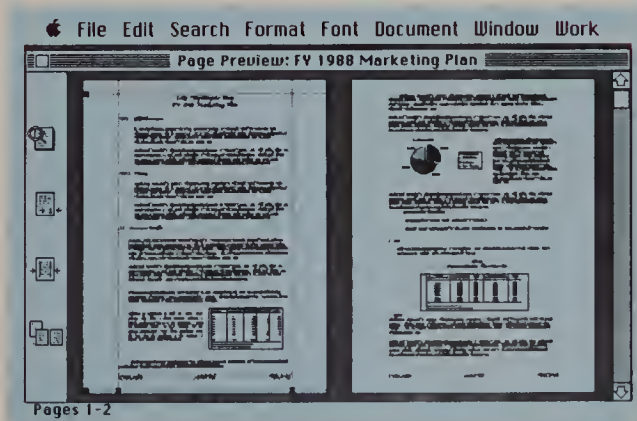
be found at your local Microsoft dealer. For the address of one near you call (800) 541-1261, Dept. E49.

Ask him to help you put Word to work in preparing your most complicated documents.

And in no time at all you'll reach your own conclusions.



What's the difference between Word's built-in spelling corrector and a secretary with a dictionary? How about a couple of hours.



Page preview saves you endless trips to the printer because you can revise page breaks and margins before you print.

Microsoft Word

Microsoft is a registered trademark of Microsoft Corporation.
Macintosh is a trademark of Apple Computer, Inc.

MACWORLD

May 1988

The Macintosh® Magazine

Departments

8 Mac Bulletin

Late-breaking news.

21 David Bunnell

29 Letters

45 Commentary/Jerry Borrell

55 Steven Levy

77 Verbatim

Cricket Software's Jim Rafferty on what's ahead for Mac graphics.

191 New Products

A quick look at new Macintosh software, hardware, and accessories.

203 How To/Quick Tips

Customizing Excel chart legends, HyperCard quote converter, changing system fonts, and more.

211 How To/Getting Started with Color

Unravel the mysteries of color wheels and palettes on the Mac.

221 How To/Insights on WriteNow

Word processing tips and tricks.

229 How To/Mac Hard Disk Tools

Time-saving utilities for hassle-free hard disks.

239 Updates

The latest software upgrade news.

245 Where to Buy

Contact information for products in this issue.

274 Best-Sellers



On the Cover

Color and the Mac II aren't inseparable. Take a look at seven monochrome and gray-scale monitors (page 130)—one might be right for you. (Photo by David Bishop.)



The colorful SE, page 111.

111 Macworld News

▪ *Color SE* The SE makes a splash with color card and monitor.

▪ *Star Trek's Macs* Creating space music on down-to-earth Macs.

▪ *New High in Color Graphics* Truevision's 32-bit card brings four-color printing to the Mac.

Plus, form stretching, powerful simulations, HyperCard videostacks, readers' hardware repair survey, and more.



PixelPaint, page 170.



Jam Session and M, page 182.

Features

- 130 The Mac II in Black and White**
What to expect from Mac II monochrome and gray-scale monitors.
- 140 Build Your First HyperCard Application**
Use this easy five-step strategy to create applications with HyperCard.
- 144 Installing Memory**
Is your SE or Plus running out of RAM? Here's how a memory upgrade is installed.
- 152 Users Friendly**
What can you get from a user group? Communication, support, and public domain software too.
- 158 Expanding the Conversation**
From servers and bridges to data translation—discover your AppleTalk networking options.

Reviews

- 166 Paging through Interleaf**
Interleaf high-end DTP.
- 168 Working in the 4th Dimension**
Powerful application generator.
- 170 A Carnival of Color**
PixelPaint color paint program.
- 172 Real-World Project Management**
Project-handling database.
- 173 Name It Again, Sam**
Draw It Again, Sam—object-oriented drawing program.
- 174 A Hard Disk to Go**
PhD disk-and-cartridge unit.
- 174 An EtherPort in the Storm**
Ethernet communications board.
- 176 Getting Control of Your Data**
Sonar text-retrieval system.
- 177 The Way to Word**
MS Write offers a subset of Word.
- 178 Sum Fun**
Math Wizard, MathTalk, and MathTalk Fractions for K-12 education.
- 179 Apple's Junior Business Printer**
ImageWriter LQ dot matrix.
- 181 Coaching Pays Off**
Spelling Coach checks words.
- 182 Musical Musings**
Jam Session and M.
- 184 They Can't Hurt**
Surge suppressors evaluated.
- 185 The Best of Both Worlds**
Mac286 runs MS-DOS software.



Tooling up for more memory? Turn to page 144 for the lowdown on installing upgrades.

MACWORLD

David Bunnell

Editor-in-Chief

Jacqueline Poitier

Director/Art and Design

Jerry Borrell

Editor

Christopher Burg

Art Director

Editorial

Managing Editor: Charles Barrett

Senior Editor: David Ushijima

Senior Associate Editor: Adrian Mello

Editorial Manager: Jane Lagas

Associate Editors: Gil Davis, Nancy E. Dunn,

Valerie L. Kuletz, Joe Matazzoni, Cheryl Spencer

East Coast Editor: Brita Meng

Assistant Editors: Cathy E. Abes,

Eileen Drapiza, Mark Hurlow

Senior Copy Editor: Julie Ericksen Hagen

Copy Editors: William Freais, Felicity O'Meara,

Katherine L. Ulrich

Editorial Assistant: Liza Weiman

Editorial Administrative Assistant:

Cathi Henriquez

Administrative Assistant: Sharon Roe

Contributing Editors: Robert C. Eckhardt,

Danny Goodman, Rob Hahn, Jim Heid,

Steven Levy, Erfert Nielson, Lon Poole,

Charles Seiter, Franklin Tessler, Bruce Webster

Harry Miller

Corporate Editor

Karen Wickre

Editorial Administrator

Art and Design

Designer: Susan Howard

Associate Art Director: Joanne Hoffman

Senior Design Associates: Leslie Barton,

Tom Morgan

Assistant to the Director: Jon Christianson

Production

Senior Production Manager: Christine Jensen

Editorial Production Manager: Ellyn L. Hament

Production Editor: Susan M. Ford

Assistant Production Manager:

Claudia Smukler

Lead Typesetter: Mark L. Duran

Typesetters: Barbara Tannenbaum, Virginia Weir

Advertising Booking Coordinator:

Rosanne Reynoso

Advertising Billing Coordinator: Kevin Greene

Production Assistant: Katie Scott

James E. Martin

Publication Director

Marketing and Advertising Sales

Director of Advertising Sales:

Patricia Navone (415/243-0505)

Senior Account Manager/No. California

(San Francisco): Penny Rigby (415/243-0505)

No. California (San Jose): Cherie La France

(415/243-0505)

Midwest: Shannon Dolan (312/827-4477)

Southeast: Kathy Isaacs (404/394-0758)

New England: Claire Wallace (617/879-0700)

Eastern Advertising Manager/New York:

Bill Thompson (201/967-1350)

So. California, Southwest, Texas:

Lisa Hillgren, Cathi Tucker (213/312-8008)

Macworld Catalog: Carol Felde, Niki Stranz

Director of Marketing Services: Sandra Vargas

Research

Director: Cheryl Woodard

Manager: Gary L. Rocchio

Assistant Manager: Ralph Ames

Market Analyst: Ray Petsche

Report Coordinator: Steven F. York

Research Assistant: Bill Segovia

Corporate Development

Publicist: Shirley Gines

Special Projects: Jeffrey S. Glines

Editorial Assistant: Emily Bower

Administrative Assistant: Cathleen Brennan

Circulation

Circulation Manager: Daniel Orum

Business Manager: Gail Egbert

Single-Copy Sales Manager: George Clark

Single-Copy Sales Rep: Martin Garchar

Promotion Coordinator: Ed Chittenden

Fulfillment Manager: Doug Norde

Fulfillment Coordinator: Evelyn Adenau

Administration

Director: Janet D. McGinnis

Accounting Manager: Pat Murphy

Administrative Services Manager:

Joseph Wollenweber

Employee Relations Manager: Shelly Ginenthal

Training Manager: John Knight

Technical Manager: Nancy Canning

Assistant to the President: Christina W. Spence

Assistant to the Publication Director:

Loretta Giglione

Corporate

PCW Communications, Inc.

David Bunnell

Chairman

Bartlett R. Rhoades

President & CEO

John Griffin

Vice President

Herbert Linden

Vice President

James E. Martin

Vice President

Jacqueline Poitier

Vice President

Cheryl Woodard

Vice President

Andrew Fluegelman

1943-1985

Founding Editor

May 1988

Volume 5, Number 5

Macworld® (ISSN 0741-8647) is published monthly by PCW Communications, Inc., 501 Second St., San Francisco, CA 94107. Subscription rates are \$30 for 12 issues, \$60 for 24 issues, and \$90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage.

Add \$16 per year from Canada and Mexico; add \$16 per year for surface mail or \$95 per year for airmail from all other countries. Second-class postage paid at San Francisco. POSTMASTER: Send address changes to *Macworld*, P.O. Box 54529, Boulder, CO 80323-4529. For dealer inquiries call 800/621-5461, in California 800/521-8455. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505.

For subscriber service questions call toll-free 800/525-0643 (in Colorado 303/447-9330) or write: Subscriber Services, P.O. Box 54529, Boulder, CO 80322-4529.

Macworld is a publication of PCW Communications, Inc. *Macworld* is an independent journal not affiliated with Apple Computer, Inc. APPLE, the APPLE LOGO, MAC, MACINTOSH, and MACWORLD are registered trademarks, and MACLETTER is a trademark of Apple Computer, Inc. Printed in the United States of America.

Copyright ©1988 PCW Communications, Inc. All rights reserved. *Macworld* is a member of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 80 computer publications in more than 28 major countries. Fourteen million people read one or more IDG Communications publications each month.



A disk each month

PACKED with PROGRAMS

Over 500,000 sold to homes, schools and offices.

DISCOVER UPTIME. Build an exciting library of programs for less than one dollar each. You deserve value. At UPTIME value is yours. Each month over 30,000 people just like you enjoy UPTIME. Your disk arrives with eight programs and more every month...

Enjoy eight programs including two new desk accessories on each monthly disk. Make your life easier. Get more from your Macintosh. Organize and be more productive with **home** and **business management** programs. Learn with **educational** programs. Enjoy all the **games** and **adventures**. Using your Macintosh is now a snap with **tutorials** and **desk accessories**.

It's easy, inexpensive and fun. It's UPTIME! Too good to be true? There's even more! Each monthly disk has reviews of the latest software, hardware and peripherals. Save time and money. Learn the strengths and weaknesses of each item we evaluate. Shop "on the disk" in our Micro Discount Mall.

Subscribe now and save. You won't believe the low price! Satisfaction is guaranteed — or your money back. You'll be amazed at just how much comes on every UPTIME disk. Make the very next one yours. Fill out the coupon. For immediate service call toll-free:

1-800-437-0033
anytime, day or night.



QUALITY PROGRAMS
LESS THAN
\$1 EACH

NEW

FOR ALL
MACINTOSH
COMPUTERS

A Typical Disk Includes:

Password Protect · Font Edit · Charlotte Font
Version Reader · MacLanding · Blackjack
Modem Meter DA · Newsletter Clips

Look for us in Waldenbooks, B. Dalton
and other book and computer
stores in your area.

I'LL BYTE!!!
SAVE \$89.90 → 12

I'm a Macintosh enthusiast who wants more.
Disk Issues \$89 ☐

6 Disk Issues \$59 ☐
(Add \$2 per issue in foreign countries, except Canada and APO)

3 Disk Issues \$36 ☐

1 Disk Issue \$14.95 ☐

Name _____

Address _____

City _____

Type of Computer _____
☐ Payment enclosed.

Bill my: ☐ Visa ☐ MC ☐ Exp. Date _____

Signature _____

Account No. _____

State _____ Zip _____

(Please make checks payable to UPTIME.)

Send to:
UPTIME · PO Box 299
Newport, RI 02840
(401) 849-4925
MAC 588

A technological breakthrough for using your Mac data disks in a PC.

Turn a PC 3.5" drive into a PC/Mac drive for only \$159.

Now it's easy for the Macintosh and PC to share files. Installed in an IBM PS/2 Model 30 (or a 100 % PC or AT compatible with an internal 3.5" drive), the new **Copy II™ PC Deluxe Option Board** allows the PC to read and write Macintosh data diskettes directly.

A low-cost, state-of-the-art solution—no "extra" drives, serial cables or network needed.

Using the latest ASIC technology integrated in a half-size card, the Copy II PC Deluxe Option Board **transforms a PC's internal 3.5" drive into a dual-purpose Mac/IBM compatible drive. For hundreds of dollars less.**

All you do is pop a Mac data disk into the PC's internal 3.5" drive and go.

Easy to use.

PC users already know how to use Mac disks in a PC. The commands are virtually identical to DOS—they simply add an "M" for Mac before each one. "COPY" becomes "MCOPY," "DIR" becomes "MDIR," etc. It's really that simple.

Works with all the great Macintosh and PC programs.

Now **PCs and Macs can share data files using popular programs like Pagemaker™, Excel and Microsoft Word.** Mac Excel can even read Lotus 1-2-3®, spreadsheets directly. What's more, switching back and forth is easy. The Deluxe

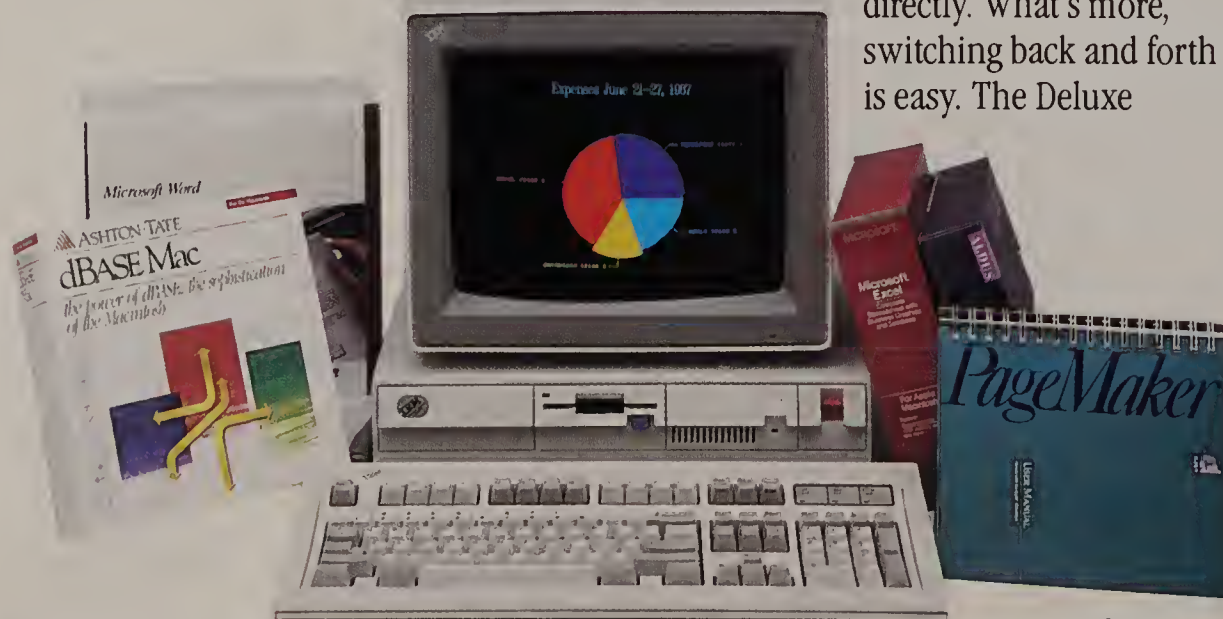
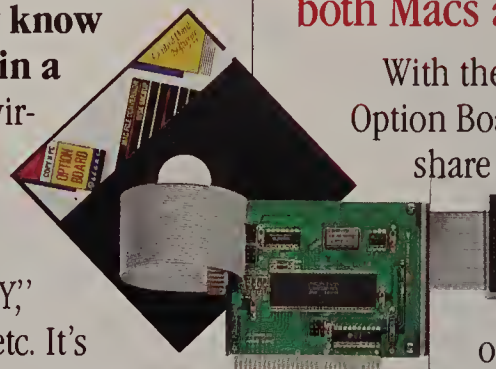
Option Board makes your PC a pro at two-way communication.

Ideal for offices with both Macs and PCs.

With the Copy II PC Deluxe Option Board, Mac and PC users can share data quickly and easily—for a lot less money than you would pay for a network or add-on Mac drives. **There's simply no easier, less expensive way to transfer data from Macs to PCs. Or vice versa.**

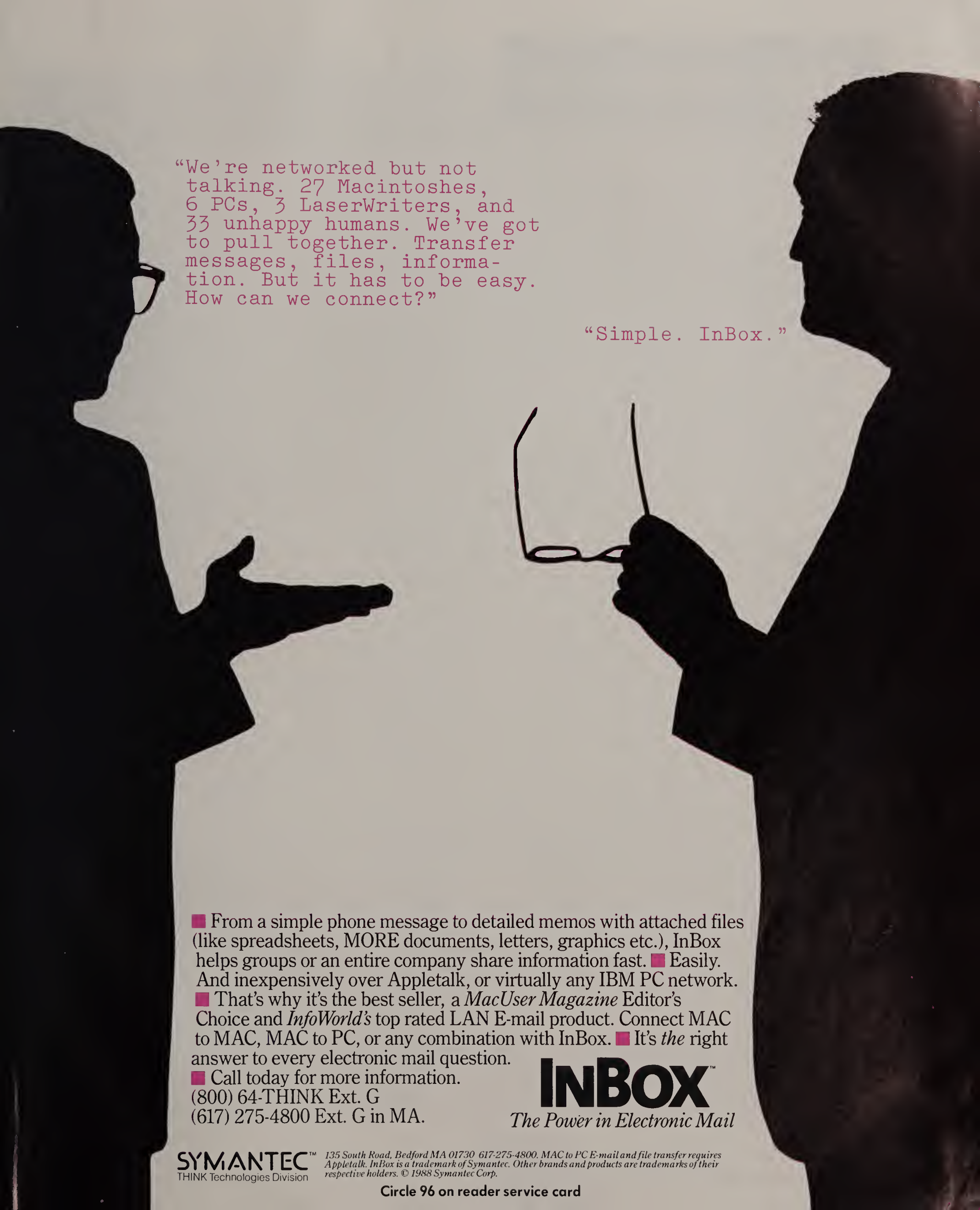
Bridge the gap.

Teach a PC to read Mac files. For the dealer nearest you, or to order direct, **call (503) 244-6036**, M-F, 8 a.m.-5 p.m. (West Coast time). Please specify computer make and model when ordering. Compaq Portable, HP Vectra and Tandy 1000 require extra \$15 cable. Current Option Board owners will receive a special upgrade offer. Questions? Call us at (503) 244-5782.



**Central Point
Software**
INCORPORATED

9700 S.W. Capitol Hwy.
Portland, OR 97219

The background of the advertisement features the dark silhouettes of two men facing each other in conversation. The man on the left is gesturing with his right hand, while the man on the right holds a pair of glasses. The text is overlaid on this background.

"We're networked but not talking. 27 Macintoshes, 6 PCs, 3 LaserWriters, and 33 unhappy humans. We've got to pull together. Transfer messages, files, information. But it has to be easy. How can we connect?"

"Simple. InBox."

■ From a simple phone message to detailed memos with attached files (like spreadsheets, MORE documents, letters, graphics etc.), InBox helps groups or an entire company share information fast. ■ Easily. And inexpensively over Appletalk, or virtually any IBM PC network.

■ That's why it's the best seller, a *MacUser Magazine* Editor's Choice and *InfoWorld's* top rated LAN E-mail product. Connect MAC to MAC, MAC to PC, or any combination with InBox. ■ It's *the* right answer to every electronic mail question.

■ Call today for more information.

(800) 64-THINK Ext. G

(617) 275-4800 Ext. G in MA.

INBOX™

The Power in Electronic Mail

SYMANTEC™
THINK Technologies Division

135 South Road, Bedford MA 01730 617-275-4800. MAC to PC E-mail and file transfer requires Appletalk. InBox is a trademark of Symantec. Other brands and products are trademarks of their respective holders. © 1988 Symantec Corp.

Circle 96 on reader service card

Mac Bulletin

A Laptop Mac

▶ Apple has made more progress in design decisions for the laptop Mac. Apparently, it's settled on an active matrix, high-resolution, lightweight LCD screen manufactured by Hosiden Electronics of Osaka, Japan. The active matrix screen does not rely on wires to conduct current to each pixel, but instead uses a transistor to produce a faster screen response for graphics software. The laptop is battery operated and comes with a 68000 processor. You'll have a choice of two models: one with two 800K floppy drives, one with a 20MB internal hard disk. Although delays in product development have been attributed to the shortage of RAM, other issues have yet to be decided, such as whether to include a built-in modem, whether to use a mouse or trackball, and what software to include in the ROM. Mentioned prices vary from \$3000 to more than \$6000, fully configured.

QuickerDraw

▶ Andy Hertzfeld's QuickerDraw speeds up Apple's color QuickDraw routines by a factor of two to three, bringing notably faster color screen-imaging to the Mac. Apple plans to release an updated version of QuickerDraw after purchasing it from Hertzfeld, who owns the copyright and intends to post the released version on bulletin boards.

QuickerDraw could be especially important for 24-bit color—which suffers from slow imaging, since the entire

image must be redrawn three times (once for each primary color). QuickerDraw's routines triple the speed of 8-bits-per-pixel screen operations, but do not change the speed of 2-bit black-and-white operations. RasterOps and Radius are using QuickerDraw to demo their video board products.

KanjiTalk

▶ Until recently, KanjiTalk (Japanese language system software) ran only on the Mac Plus. The new upgrade version 2.0 now supports the Mac SE and the Mac II. KanjiTalk 2.0 shortens the conversion time required to translate keyboard input to screen fonts and shrinks the standard screen-font size from 16 to 12 pixels. The new version also gives you more ways to add and edit characters. Expansion cards are available for the SE and Mac II that carry additional kanji fonts and characters.

Since the program is quite memory intensive, Apple recommends 2MB of RAM and a hard disk. Other kanji software expected to be released soon includes Kanji PostScript from Adobe, PageMaker Kanji from Aldus, and a Japanese version of Quark XPress. The availability of KanjiTalk on the Mac SE and Mac II is expected to further Apple's entrance into the Japanese market, currently dominated by NEC and IBM.

Concerns for A/UX

▶ Amidst the enthusiasm for Apple's A/UX at UniForum, the semiannual UNIX conference and show, a closer look at the new operating system revealed several major limitations, which Apple representatives say they are working to correct. Although Sculley's keynote address focused on the virtues of the Mac user interface, the most notable of A/UX's missing pieces was a Finder-like application that would make UNIX as easy to navigate as the standard Macintosh operating system.

Among the improvements needed to develop an A/UX Finder is a mechanism that would let more than one A/UX application access the user-interface toolbox at a time, so multiple programs could simultaneously display their own windows. Another needed improvement would let A/UX applications access all the color routines in the Mac II's ROMs and read standard Mac HFS-formatted documents.

Running Sun or Cray

▶ The promise is exciting: running a Sun or a Cray, and its applications, from a relatively inexpensive Mac II. That's why people are debating various windowing systems that will give the Mac II a ticket into the world of workstations and supercomputers.

Fueling the debate are two manufacturers who have an-

nounced Macintosh versions of Sun's Network Extensible Window System, NeWS. Wedge Computer of Waltham, Massachusetts, offers a version of NeWS that runs under the Mac OS, while the San Francisco-based Grasshopper Group has a version that runs under A/UX.

Applications running on a networked machine like a Cray mainframe or a Sun workstation can open a NeWS window on the Mac. Remote applications then create images by sending PostScript commands over a network. NeWS manages windows as well as keyboard and mouse inputs, unlike Adobe's Display PostScript, which will have to be integrated into a windowing system to be successful.

Affordable Forms

▶ Baker Graphics, of New Bedford, Massachusetts, has produced a line of products aimed squarely at small businesses with moderate budgets. *BakerForms* pin-feed form software consists of four modules designed to perform the computing functions most common in small businesses: Accounts Receivable, Accounts Payable, Purchasing, and Payroll. Each of these modules is a *Microsoft Works* template—a ready-to-run application that uses the *Works* database module as its engine.

The modules are designed to put *Works* to use immediately, without the aid of a

(continues)

Reflex Plus can show you more about relationships than Dr. Ruth

The relationships between different pieces of data within your database are all important ones.

Because Reflex Plus is truly *relational*, it can "relate" and cross-reference your data.

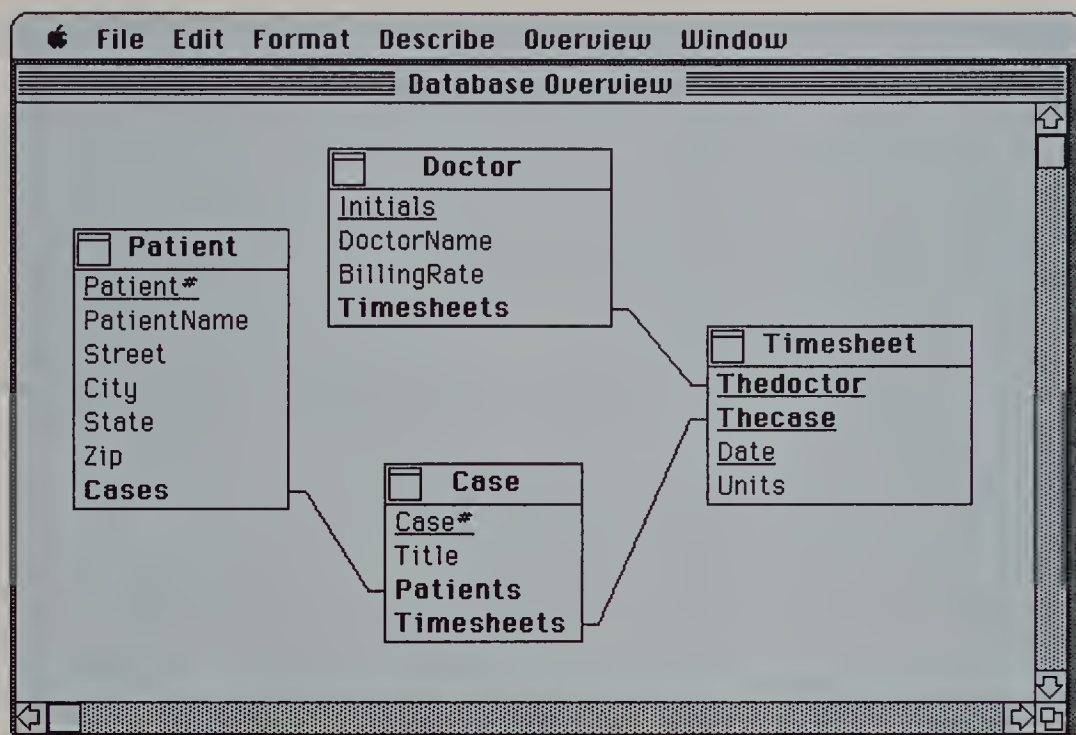
Many "database managers" are not much more than "list managers"—simple lists that can't connect and cross connect one item with another. So while they can "list," they can't really "manage."

What your data tells you depends on how you look at it

It's easy to customize your output with Reflex Plus. Whatever you're working on—letters, invoices, quotations or data entry screens—Reflex Plus lets you add graphics, position them wherever you want, change sizes, change fonts and produce truly professional results. Reflex Plus lets you make the most of your Macintosh.

Some of the power pluses of Reflex Plus

- Visual database design—a "natural" for your Macintosh
- WYSIWYG ("What-you-see-is-what-you-get")
- Truly relational database manager
- Auto-Save—which means you'll never lose data again



You simply draw connecting lines to relate one item to another.

- Paste Choice command that saves you enormous amounts of time
- Context-sensitive online Help
- Automatic creation of formulas to let you instantly search, sort, calculate, qualify and more
- Multiple entry forms for the same database
- Entry for more than one database in a single entry form
- Shows one record at a time or all records at once
- Calculated fields in entry forms
- Display-only fields
- Default, but editable fields
- GROUPBY function
- Record sizes can be 1000, 2000, or 4000 characters
- Compatible with all Macintoshes with at least 512K RAM including Macintosh SE and II
- New rewritten documentation

*Customer satisfaction is our main concern, if within 60 days of purchase this product does not perform in accordance with our claims, call our customer service department, and we will arrange a refund.

All Borland products are trademarks or registered trademarks of Borland International, Inc. Other brand and product names are trademarks or registered trademarks of their respective holders.
Copyright ©1988 Borland International, Inc.

81 1204

“Borland's new relational database, Reflex Plus, is the best Macintosh database . . . It is simple to use and operate, very flexible in design, low cost (only \$279 compared to \$500 for dBase Mac), and small in size (250K versus 730K for Fourth Dimension) . . . We converted an Omnis 3 database that took two weeks to design into Reflex Plus in two days . . . We think Borland is right on target with their approach.”

David Smith, MacTutor ”

How to succeed in business for only \$279

Reflex Plus is the super-power of truly relational databases, and it's only \$279 plus shipping and handling.



BORLAND *MACINTOSH SOFTWARE* **INTERNATIONAL**

*60-Day Money-back Guarantee**

For the dealer nearest you or to order,

Call (800) 543-7543

Circle 199 on reader service card

programmer or consultant. Each manual leads the user carefully through the steps that might trip up a computer neophyte: making backup disks, entering data, printing reports, converting from a manual accounting system, and so on.

Of course *Works*' own limitations constrain *BakerForms* somewhat, but Baker Graphics plans to take advantage of built-in macros if Microsoft adds them to the next Mac version of *Works*. All four *BakerForms* products are designed to print on ImageWriters using preprinted pin-feed checks and forms produced by Baker Graphics.

HyperCard Super Stack Contest

► *Macworld*, Apple Computer, and Bantam Books are in pursuit of excellent HyperCard stacks for the Super Stack contest they are jointly sponsoring. Expert judges will evaluate commercial, noncommercial, and custom stacks of all types and award prizes of Macintosh hardware and a special autographed, leather-bound edition of Danny Goodman's *The Complete HyperCard Handbook* to the developers of the most outstanding stacks. A feature story in the November issue of *Macworld* will spotlight the winners.

To enter, send clearly labeled disks, documentation (if necessary), and a one-page statement of the purpose and intended audience of your stack (you may include on that page mention of any special features you'd like to call to the attention of the judges) by June 15, 1988, to: Super Stacks, *Macworld*, 501 Second St., San Francisco, CA 94107. Entries, which will not be returned, may also be consid-

ered for "Your Best Stacks" in *Macworld News*. For additional details, send a stamped, self-addressed envelope to the same address, or look for the announcement in next month's *Macworld*.

Surprising Virus

► A HyperCard stack labeled New App Stack on computer bulletin boards contained a software *virus* that infected more than 1000 Mac downloaders. A virus is a piece of code that can sometimes delete files or create other havoc. New App Stack attracted attention, since it supposedly listed new Apple products due out in March. But when run, the stack would (unbeknownst to the user) install an Init resource into the active System file. On March 2, 1988, the one-year anniversary of the introduction of Apple's Mac II, the Init would cause a picture and message calling for world peace to appear on screen. The Init would remove itself on March 3. The peace virus is the brainchild of Richard Brandow, publisher of the Montreal-based *MacMag*. Brandow has claimed that programmer Drew Davidson spent a year testing the virus to ensure that it didn't damage files.

Scripting Buttons

► HyperCard programming for nonprogrammers has become a step easier, with Dan Shafer's push-button approach to programming. Script Expert provides a series of scripts for frequently needed instructions (such as click, end, add, find, do, sort, play, repeat) as well as for set-

ting properties like brush shape and number of decimals. You choose a script by pressing a button and answering questions. If you choose the arrow button, for example, Script Expert displays a screen of appropriate scripting buttons. As you respond to the questions, the script appears in a scrollable window. A magnifying glass takes you to full-screen size so you can see more of the script at once and change it more easily. Script Expert also includes an online help feature. For more information, contact HyperPress Publishing at 415/345-4620.

Project 2000

► To solicit ideas about new computers, Apple recently invited student teams from 12 universities to prepare papers that presented their conceptualization of the future of technology and personal computing. Alvin Toffler, Ray Bradbury, Diane Ravitch, Steve Wozniak, and Alan Kay formed the panel of judges that evaluated submissions. The University of Illinois in Champaign-Urbana won first place for "Tablet: Personal Computer of the Year 2000"—a paper describing a computer the size of a notebook, combining the powers of computation and communication. Second-place winners at Princeton University developed "The Apple PIE" (Personal Information Environment), which integrates radio, television, telephone, and other information technologies. "CORE," originated by University of Minnesota students, won third place. It lets users carry with them the primary functionality of their computer—memory, processing power, and accumulated knowledge.

AppleShare PC

► Apple is now shipping AppleShare PC, a program that runs on MS-DOS computers and gives them the ability to share files, applications, storage space, and information with the Mac, as well as print files on a LaserWriter transparently from within an MS-DOS application.

Using the AppleShare server from an MS-DOS PC is as easy as using a local disk drive. The AppleShare server appears to IBM PC users as a DOS drive and is accessed using standard DOS commands. If the file formats are common to both Apple and MS-DOS programs, like the WKS format for Lotus 1-2-3 and Excel, then information can be exchanged immediately between the MS-DOS and Macintosh computers. If the formats are different, then the files can be translated via Apple File Exchange. AppleShare PC works with the AppleTalk PC Card and requires a LocalTalk connector kit.

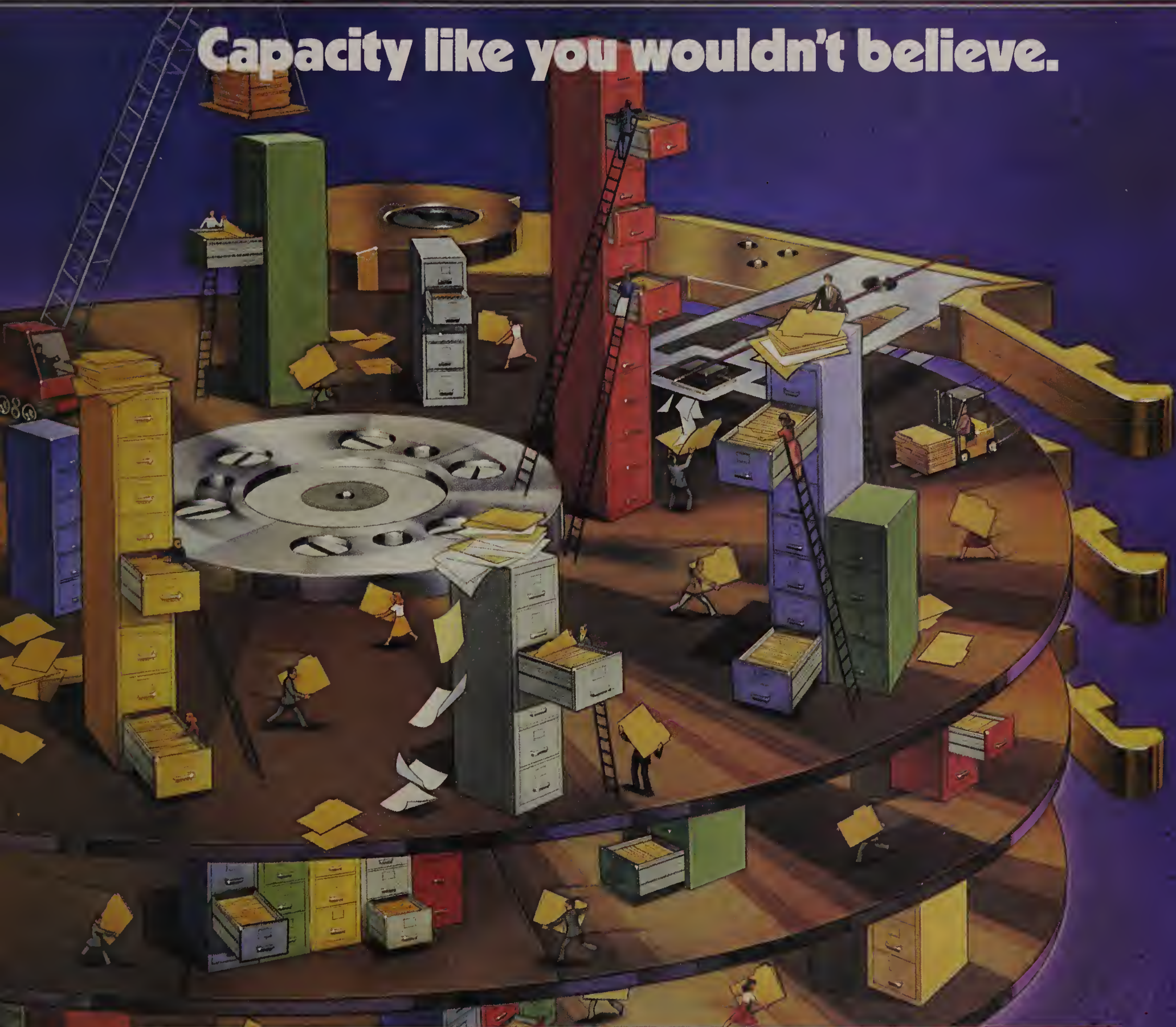
Fax It

► While we wait for Apple's fax modem to appear, Cygnet has been at work developing a similar product. Marketed by Abaton, the 12/48 Fax Modem combines the capabilities of a Hayes-compatible 1200-bps modem with a fax machine. A fax modem lets you upload and download files to another location that has a fax machine. Files that you send can be output at the other end by a fax thermal printer. Fax files can also be

(continues)

Rodime drives for the Mac.

Capacity like you wouldn't believe.



The largest capacities of any hard disk drives for Macintosh™ — 140 megabytes with the largest selections, 20, 45, 100 and 140! And the fastest average seek times... 28 ms!

A combination any Mac user would love.

The 450 RX™ — 45 megabytes of internal storage for the Macintosh SE and Macintosh II.

The 1000 RX™ and 1400 RX™ — 100 and 140 megabytes of internal

storage for the Macintosh II.

And the PLUS External Series for the Mac Plus and SE. 20 and 45 megabyte capacities and our new 100 and 140 megabyte external box that fits right under the Mac.

The 20 and 45 megabyte internal PLUS drives have fans that cool

the drives *and* the Mac Plus. Designed by Rodime for easy installation.

Best of all, the RX and PLUS Series drives have the unmatched reliability and support of Rodime — the largest supplier of hard disk technology for the Macintosh.

Rodime drives. The largest capacities and the fastest speeds.

Load up with the leader and you'll be a believer.

RODIME
SYSTEMS

Rodime, Inc., 29525 Chagrin Blvd., Pepper Pike, OH 44122, 216-765-8414
Rodime PLC, Nasmyth Road, Southfield Industrial Estates, Glenrothes KY6 2SD, Fife, Scotland

Circle 149 on reader service card

printed on a LaserWriter, which produces a much higher quality final output than a thermal printer. You can send multiple documents to multiple destinations, and create a scrollable phone directory for frequently called sites. The Abaton modem supports MacPaint, PICT, and TIFF file formats, is compatible with Group III fax machines, and works across AppleTalk and TOPS networks so that a number of Macs can share a single Abaton fax modem. For more information, contact Abaton at 415/463-8822.

Financial Shortcuts

▶ People using Excel sometimes want quick answers. That's why MicroTemp's Financial Calculator offers 45 financial formulas commonly used by small businesses, real estate investors, financial planners, and individuals preparing budgets. You can quickly obtain answers to problems that involve calculations of monthly payments, interest rates, present and future values, rates of return, sales, income, break-even points, monthly cash flow, and amortization. The program builds templates for Microsoft Excel and Works that let you see all computation figures at one time. A user's manual explains how to customize the templates. For more information, call MicroTemp (707/575-1459).

AT&T Allies with Sun

▶ AT&T's newly acquired 15 percent stake in Sun Microsystems may strengthen the latter's competitive positioning, relative to the Mac II, as a high-powered workstation. At the same time, it strengthens AT&T's position in the mini-

computer market. Not only does the AT&T investment add credibility to Sun, but it brings additional capital for Sun's development of a unified UNIX operating system that will run on other computers, unlike the DEC and IBM proprietary systems. Sun also plans to release a computer based on the Intel 80386 chip.

Across the Board

▶ Access Technology has entered the Mac monopoly game and acquired two pieces on the board—Data Tailor's Trapeze spreadsheet and MindWork's MindWrite word processor.

Access Technology is best known for its integrated spreadsheet 20/20, which runs on computers made by DEC, Prime, Data General, AT&T, Wang, Sun, Apollo, and IBM. Similar to Lotus 1-2-3, 20/20 provides spreadsheet users with integrated graphics, project modeling, and database capabilities. The company doesn't plan to offer 20/20 for the Mac. While Access does not plan to incorporate MindWrite and Trapeze into 20/20, owners of 20/20 will be able to import MindWrite and Trapeze files. For more information, call Access Technology at 617/655-9191.

DTP Basics

▶ Recognizing that acquiring a tool doesn't mean you've acquired a skill, Adobe Systems and Invision now offer programs to teach the basics of typography and design to desktop publishers. Three of the Adobe Type Library Pub-

lishing Packs provide typefaces and design tips for desktop publishers who prepare newsletters, forms and reports, and displays and presentations. The first product to ship, Publishing Pack 1: Newsletters, costs \$395 (the full set of three packs is expected to cost \$605) and includes three typeface families and suggestions on how to use type in newsletters.

Invision's Design Sense comes with a videotape that covers basic design elements, type fonts, and the steps in putting together a newsletter. It also identifies common typesetting errors. For more information, contact Adobe Systems at 415/961-4400 or Invision at 617/444-4060.

Faster and Cheaper

▶ Until now, souping up the SE with an accelerator board has cost anywhere from \$599 to \$1299 (MacMemory \$599, MacPeak Orion \$795, Dove \$899, Radius \$995, General Computer \$1299). SuperMac has driven the prices down further with its introduction of SpeedCard, an SE accelerator board priced at \$399. SpeedCard's 16-MHz 68000 processor doubles the processing speed of the 8-MHz SE. While the card's performance is due in part to the processor, it's primarily the 16K hardware RAM cache that permits significant speed improvements by storing frequently used instructions and data. SuperMac also offers a 16-bit expansion bus (\$149) that lets you add another SE expansion card. To further enhance the system, you can purchase a 68881 16-MHz math coprocessor with the SpeedCard (\$699 for both). For more information, call SuperMac at 415/964-8884.

Digitizing in Color

▶ Rather than reconstruct an image with your color paint program, you can scan color images directly to the Mac. Sharp's JX-450 is a 300-dpi scanner that reads four-color artwork. It offers 64 shade gradations with 260,000 shades. The unit can also be used as a gray-scale scanner. It accepts up to 11-by-17-inch page scans and also scans 35mm film and overhead projection transparencies with an optional mirror unit. To output your image, you can use Sharp's JX-550 color thermal-transfer printer. LaserPaint-Color II, from LaserWare, can drive the Sharp Scanner. It captures up to 24-bit images, which you can then edit in the program and print as four-color separations. For more information, call 800/237-4277.

Animation in HyperCard

▶ MacroMind, of VideoWorks fame, now gives HyperCard stackware developers a way to perk up their lifeless stacks with the recent release of VideoWorks II HyperCard Driver. The driver unites the two development environments: it lets you create a database of animation and sound documents, and it adds color and full-screen documents to stacks. It installs with the click of a button and includes online help. Available through Brøderbund (415/492-3200), the VideoWorks II HyperCard Driver retails for \$99.95. □

End Financial Hassles. Quicken, \$49.95

New!

Click and Quicken automatically updates your check register, recalculates balances and prints your checks.

Click and Quicken instantly writes your regular checks.

Quicken works like your paper checkbook. Not a speck of accounting mumbo-jumbo.

Click three times for these instant reports:

- Income & Expenses (P&L)
- Budget vs. Actual
- Taxable Income/Deductions
- Rental Property/Job Cost
- Accounts Payable
- Cash Flow/Cash Needs
- Payroll Taxes

Try Quicken for 30 days free!

New! LaserChecks™. Now print checks on all printers.

Introducing the fastest, easiest way to do your personal finances and small business books. Quicken for the Macintosh®.

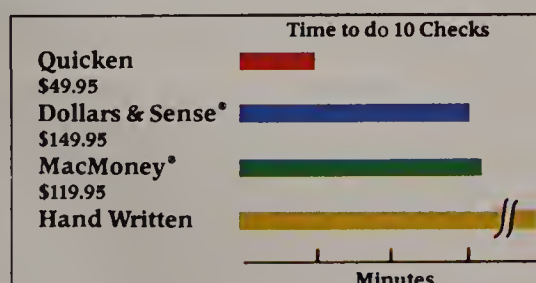
Eliminate Bookkeeping Chores Forever.

Quicken is so automatic it does your financial work for you. To pay bills just tell Quicken the amounts. It does 14 automatic bookkeeping steps and hands you the printed checks.

At tax time, Quicken gives you the itemized reports supporting each tax deduction. Need to find a check you wrote months ago? Quicken finds it in 3 seconds flat.

Finish Financial Work in Seconds

Quicken is extremely fast. It does in seconds what used to take minutes or hours.



No Accounting Hassles.

Before Quicken, computerizing your books was difficult, even on a Mac. Accounting jargon, inflexible rules and tedious procedures were standard.

Quicken has changed all that. Like Macintosh, Quicken uses a familiar visual metaphor; a checkbook right on your screen. So there are no strange rules to learn. Absolutely no "debits." No "credits." No "ledgers." No "forced closes." Nothing in your finances changes. Finally there is bookkeeping with the soul of the Mac.

Flexible Enough for Personal or Business Use.

Quicken works for individuals. For service and manufacturing businesses. For doctors, consultants, designers and property managers. For anyone who wants relief from routine bookkeeping hassles.

Order Now and Get Two Free HyperCard™ Stacks.

- Check Designer—put clip art or logos on your checks.
- Custom Reporter—produce a wide variety of customized financial reports.

Specifications:

Compatibility: Exports data in SYLK format for use in spreadsheets like Excel.® Exports data to HyperCard.

Hardware: All Macintosh with 512K RAM. All printers, including laser printers.

Capacity: Number of bank accounts—unlimited. Number of transactions—unlimited. Number of income/expense categories—unlimited. Amounts to \$9,999,999.99.

Other: Not copy protected.



MWE0588



I want to try Quicken on your no-risk 30-day guarantee. If I don't save time, eliminate hassles and get the clearest picture of my finances, I will return it within 30 days for a full refund.

Quicken for Macintosh. \$49.95 plus \$3.00 shipping and handling. California residents add sales tax.

Call 800-624-8742 (in California call 800-468-8481) or send this coupon with your check or credit card number to:

Intuit.

Name _____

Address _____

City _____ State _____

Zip _____ Phone _____

☐ Check enclosed (No purchase orders)

☐ Visa ☐ MasterCard ☐ Am Ex

Card No. _____

Exp. _____



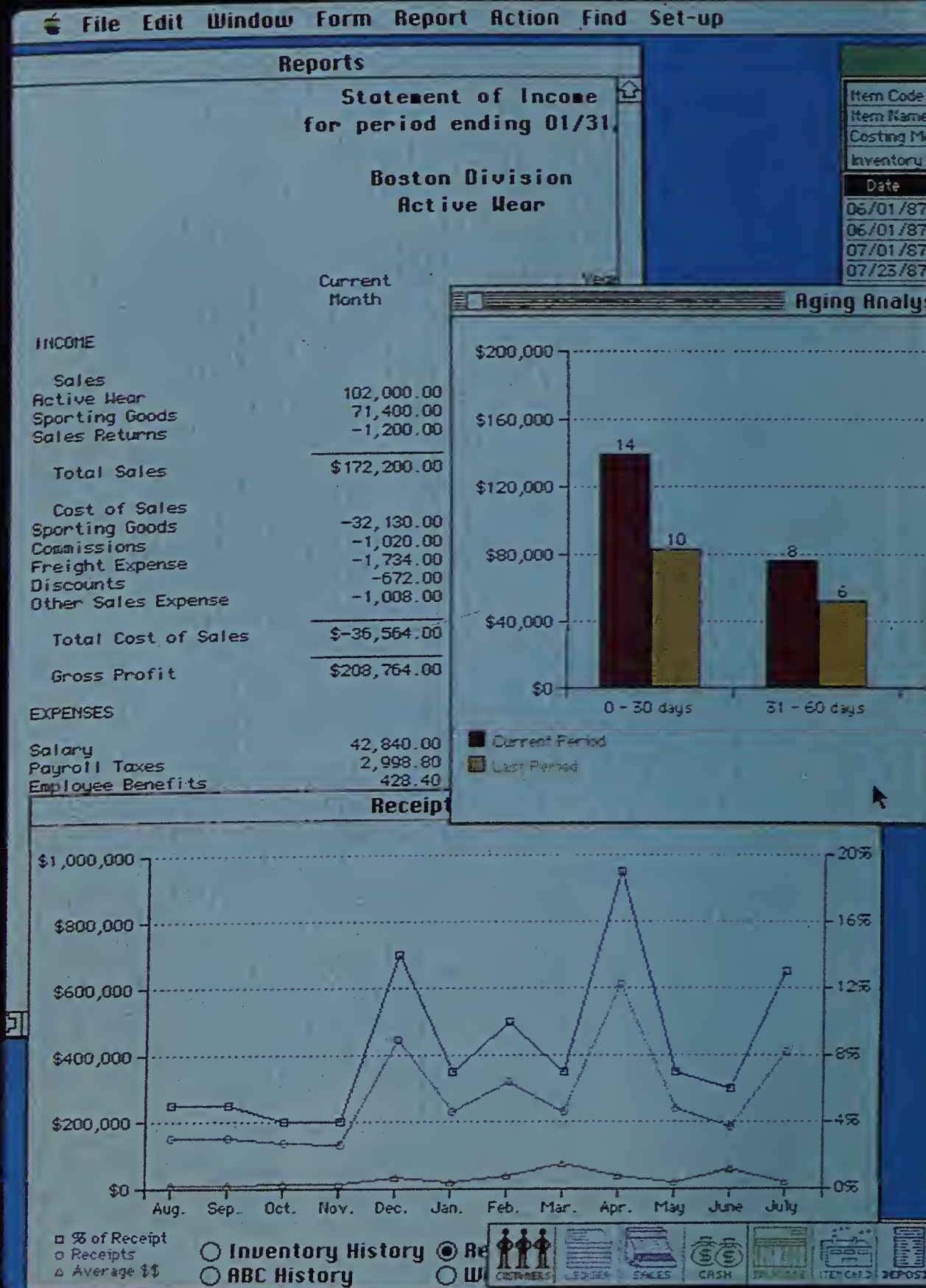
540 University Avenue
Palo Alto, CA 94301

Imagine sitting at a "power desk" where you could instantly call up the information you need to make sound management decisions. That's the concept behind Insight. Now when someone asks you "How's business?," you'll actually know the answer.

Who owes you money? For how long? How are you going to collect it? These are the answers you need to run your business. Insight's Aging Reports give you the whole story at your finger tips.

If you take that big order, can you fill it? Should you stock up, cut back—the answers to these questions can only come with Insight.

Insight not only gives you answers, it does it in a way that's easy to understand. Our Information Dimension™ can simplify even the most complicated data through the use of both powerful full-color graphics and the ability to duplicate your own business forms on the screen.



Accounting isn't a numbers game. It's an answers game.

Accounting, quite simply, is used to understand financial data in order to help you manage the present and affect the future.

But you can't do that if your accounting system gives you simple numbers when what you need are simple answers.

Only one accounting software system can give you the answers, advice and analysis you need to make critical decisions and manage your business most effectively.

That's Insight.

How can you manage without it? Insight analyzes and interprets numbers and then through a unique series of Expert Reports, it tells you what they mean to your business and what you can do about them.

Who owes you money? For how long? What's your inventory value? How much can you borrow? Having Insight is having the answers to all these types of questions, at your fingertips. There's never been a better management tool available for business.

Insight into your whole business. Insight offers a total understanding of your business. Modules include Accounts Receivable & Billing, Accounts Payable, General Ledger, Inventory and Time Billing and they're available in multi-user versions. All are packed with high-power capabilities yet intuitive and simple to use—like the Macintosh® computer they were designed for.

Recognized by the best. Don't just take our word for it—Peat, Marwick, the world's largest accounting firm, has given Insight its certification. And according to *Infoworld*, "We haven't seen any IBM or PC packages... this powerful." Plus, the editors of *MacUser* and the readers of *Macworld* have voted Insight the best accounting software.

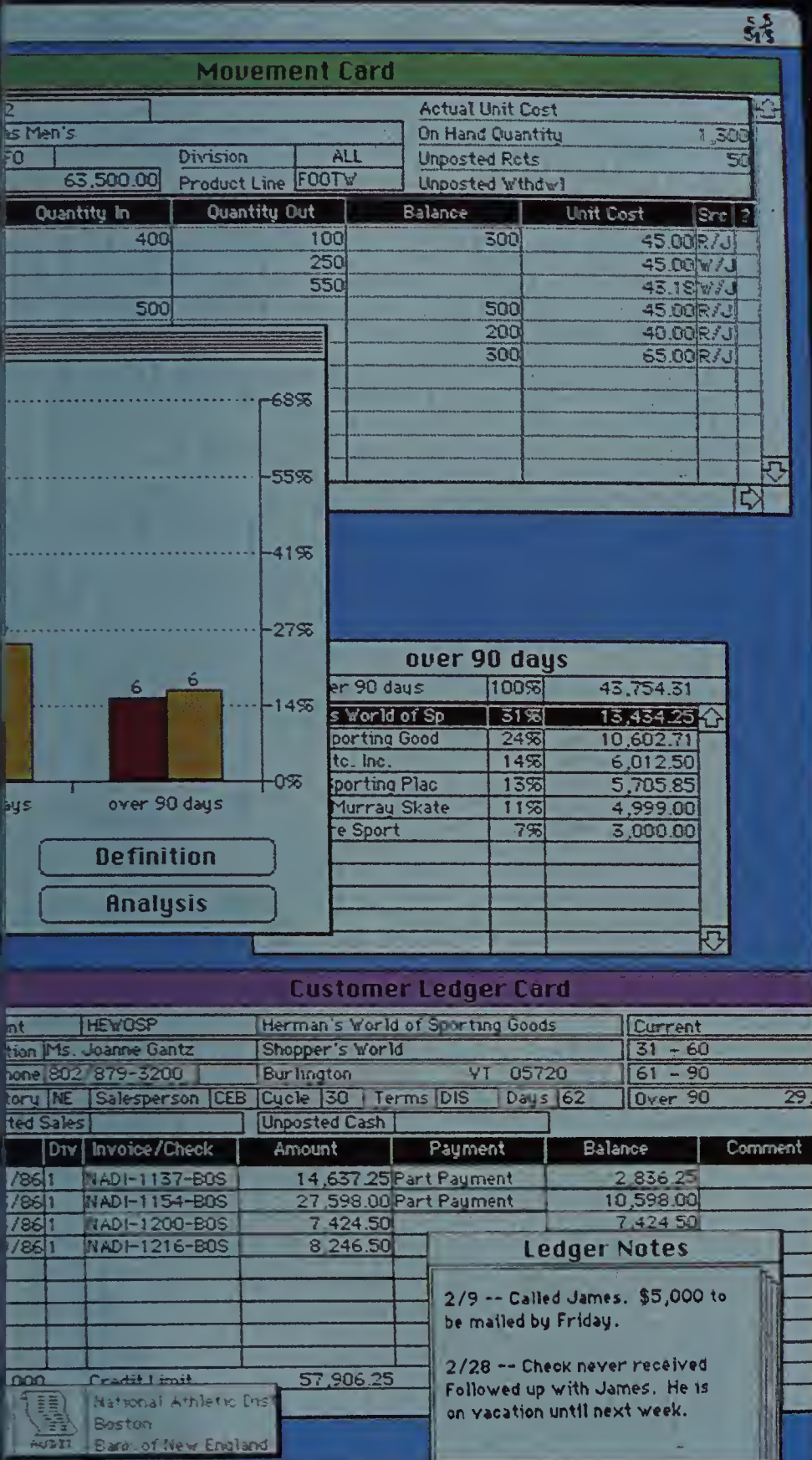
For more information or a Rolling Demo Disk, send \$9.95 to 529 Main St., Boston, MA 02129 or call us at (617) 242-7700. There's no substitute for Insight when it comes to managing your company.



INSIGHT

HELPING SMALL BUSINESSES WIN.

Circle 128 on reader service card



PageMaker



Three years after inventing desktop publishing, the people at Aldus have just re-invented it.

With a new version of PageMaker® dedicated to one simple proposition: freedom of choice.

From the beginning, PageMaker has given people unequalled control over all the elements of their publications. But now we've added many new features that also give you the ability to assemble even the longest documents with a couple clicks of your mouse. With PageMaker 3.0 the choice is always yours.

Here are a few of the new ways you'll have to exercise it.

Text Wrap

Our new text wrap function gives you the choice of flowing text through an object, jumping over it or wrapping around it, like you see here.

And when you move a graphic, your text will automatically reflow around it.

You can also control the margin between

text and image and, with a custom wrap feature, fit text to even the oddest shape.

Autoflow

Now have the option of flowing text automatically to speed

up long-document creation or placing it column by column for shorter, more design-intensive pieces.

Style Sheets

PageMaker's style sheets give you the ability

to create and apply style formats, including color, for all your text. And that allows you to reformat

an entire story or document in a single operation.

You can also tag text in your word processor, database or spreadsheet for instant formatting in

TECHNICAL PAPER

kind of delay potentially unaffordable. A single such delay could not only wipe out the savings of those tires on that unit, it could lose a valued, profitable customer, thereby substantially reducing revenue.

Tire standardization is another difficulty today with wide-base singles. These tires cannot be used on steer axles due to their lateral wet traction problems and propensity for tire wear caused by light loading. Fleets therefore would have to purchase a conventional type of tire for the steering positions. The problem with that is retreads are not generally used on steer axles and the retreaded tires wouldn't fit in any other position.

Equipping today's trucks with wide-base singles is also costly from a purchase tax standpoint. Since the Federal Excise Tax (FET) for a 212-pound 16.5R22.5 is \$71.50, the total purchase price of the wide-base single, though only 57% more than a standard radial, is now much closer to the cost of two low profile tires whose total FET is \$48.00. The small price advantage, as well as some of the cost savings of the wide-base singles, can be more than offset currently by the added cost of the special axles and wheels they require.

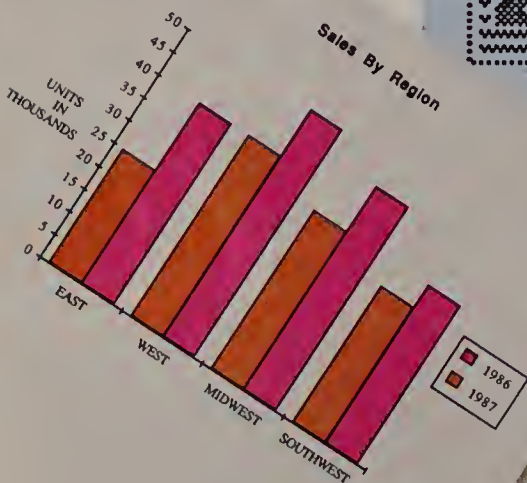
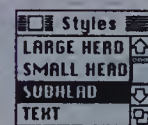
Wide-base singles may be the tire configuration of the future. New materials and constructions could increase their value while new tread designs and compounds may reduce their disadvantages. Should a reliable, self-sealing liner be developed to eliminate equipment downtime and freight delays, the acceptance of this type tire would be appreciably accelerated.

To summarize, the following is what we consider realistic and achievable in five to ten years:

Low Aspect Ratio Tires These must exhibit reduced rolling resistance, weight and size to increase vehicle payload and decrease fuel consumption. Fleet operators will want to choose between dual low profile tires for other than steering positions or low aspect ratio wide-base singles, which offer further advantages in weight and rolling resistance over dual low profile tires.

Hardware for Low Aspect Ratio Tires In order to maximize these tires' performance, truck manufacturers must design equipment to fully accommodate the smaller diameter tires. As soon as practical, suspensions must be redesigned to be compatible with the springing characteristics of radial tires. Reduced tire size may also create a need for redesigned transmission and drive axle gearing.

Hardware for Wide-Base Tires Axles will have to be lengthened to simulate these tires correctly under 102" wide trailers. The added room afforded may provide for more design creativity in the brake and sus-



Define styles

Style:

BODY COPY
LARGE HEAD
SMALL HEAD
SUBHEAD
TEXT

face: Times + bold + size: 18

New...

Edit...

Remove

Copy...

OK

Cancel

Close

See How We Run.

Use this card to order a PageMaker videotape demonstration (\$9.95) or self-running demo disk (\$4.95).

Please send me:

☐ Beta demonstration video (\$9.95)

☐ VHS demonstration video (\$9.95)

☐ Macintosh demo disk (\$4.95)

☐ 5 1/4" PC AT or compatible demo disk (\$4.95)

☐ 3 1/2" PC AT, PS/2, or compatible demo disk (\$4.95)

Enclosed is my check or money order for \$ _____.

Send to: Aldus Corporation, 411 First Avenue South, Seattle, WA 98104. Or call 1-800-33-ALDUS to order with your credit card. In Washington state call 1-206-628-2375.

Offer good through June 30, 1988.

MW0588

Please Tell Us A Little About Yourself

Do you personally have graphic arts training or experience? ☐ Yes ☐ No

How many employees are in your company? ☐ 1-25 ☐ 26-100 ☐ 101-1,000 ☐ over 1,000

Primary business of company (check one):

- | | | |
|--|---|-------------------------------------|
| <input type="checkbox"/> Wholesale/Retail | <input type="checkbox"/> Financial Services | <input type="checkbox"/> Education |
| <input type="checkbox"/> High-tech Manufacturing | <input type="checkbox"/> Professional Services | <input type="checkbox"/> Government |
| <input type="checkbox"/> Other Manufacturing | <input type="checkbox"/> Transportation/Utilities | <input type="checkbox"/> Non-profit |
| <input type="checkbox"/> Communications | <input type="checkbox"/> Health Care | <input type="checkbox"/> Other |

Please list any desktop publishing programs you already own or use (including prior releases of PageMaker): _____

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Telephone _____



ALDUS

Is Turning 3.0

PageMaker. And any style commands from Microsoft® Word files are read directly.



Templates

Since 20 professionally designed templates are now included with

PageMaker, it's easy to give every document you create a designer's touch.

You use the templates like blue-

prints, placing your own headlines, text and graphics according to the designated styles and sizes.

Spot Color

Mix a virtually unlimited palette of colors based on any one of three standard color models: RGB, CMYK

or HLS. Then you can tag any element in the publication with a color by just clicking your pointer on it.

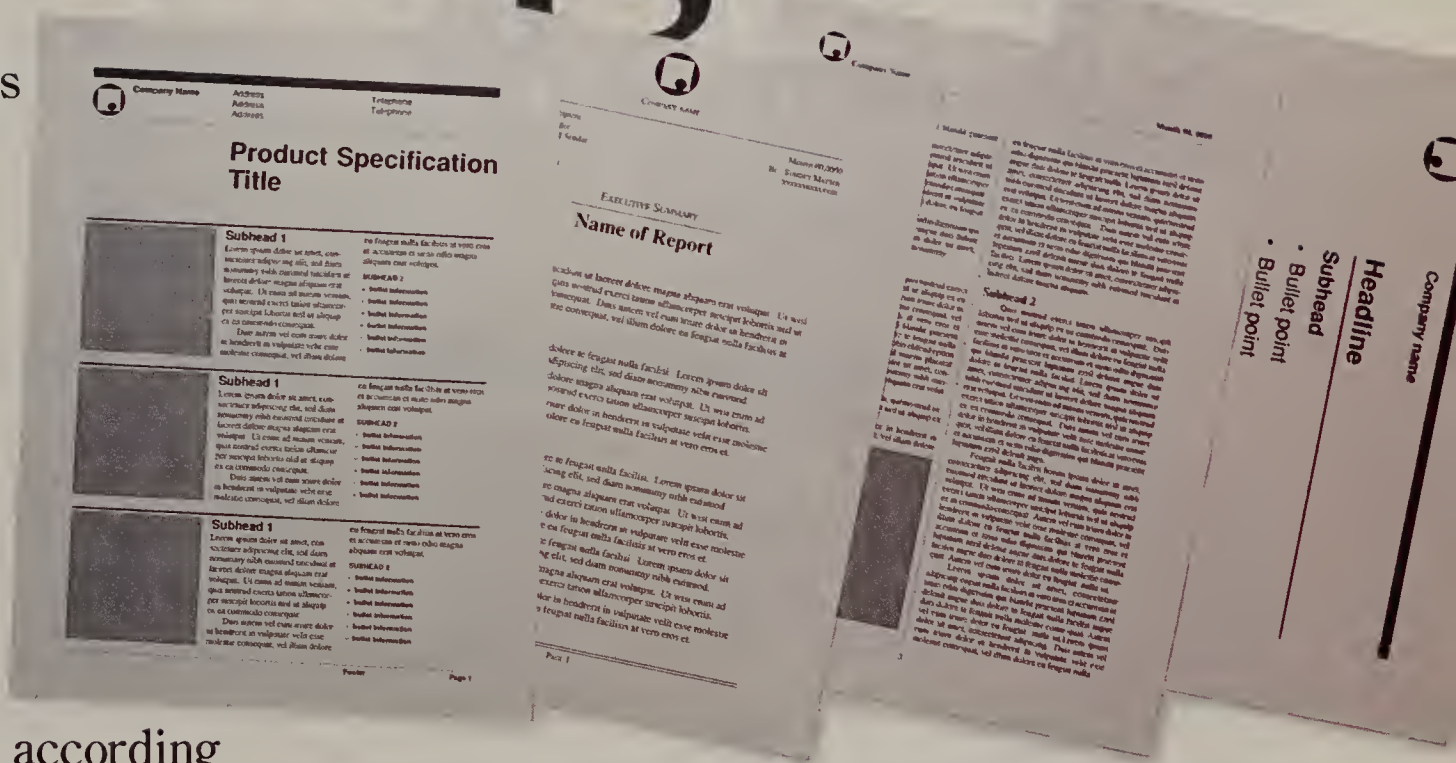
And, when you print your document, PageMaker 3.0 gives you the choice of a single composite image or separate sheets for each color used.

You can even place registration marks in the corners of your separated output for accurate assembly by a professional printer.

Image Control

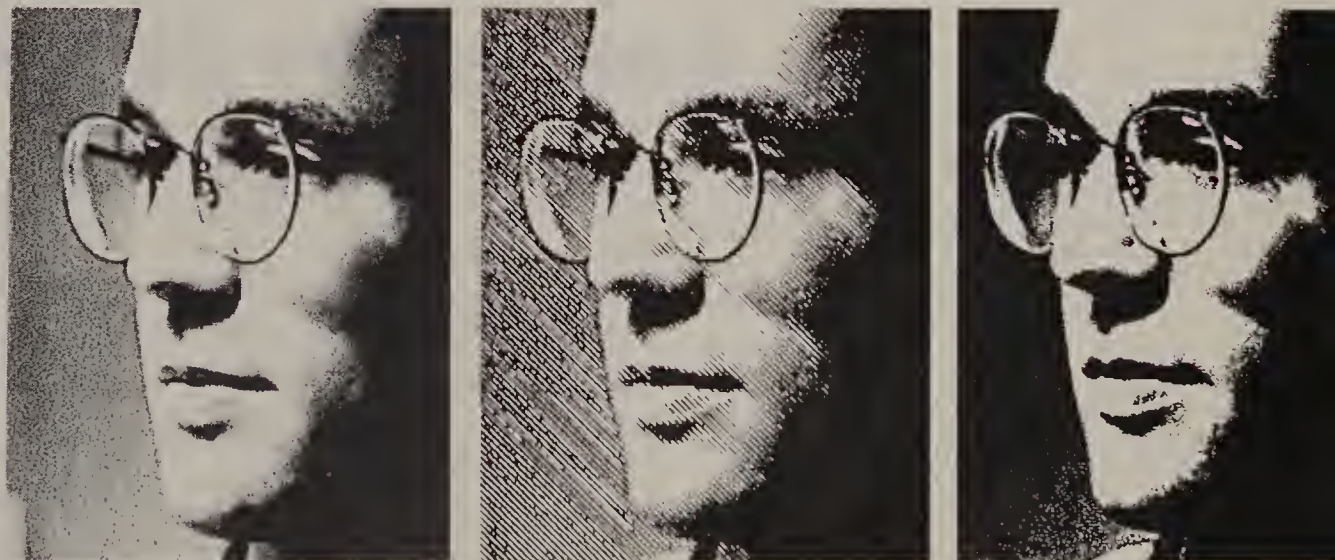
You can now adjust the lightness or contrast of any scanned image or bit-map graphic you place in PageMaker.

And if you want to further customize a graphic, you can use one of our built-in special effects, or even create one of your own.



If all this has whetted your appetite to find out more, visit your authorized Aldus dealer today.

And ask for the program that did a number on PageMaker.



PageMaker®

411 First Avenue South, Seattle, WA 98104 (206) 622-5500

This ad was created with the help of Aldus PageMaker, Aldus FreeHand and Aldus SnapShot.

©1988 Aldus Corporation. The following are registered and unregistered trademarks of the companies listed: PageMaker, Aldus FreeHand, Aldus, Aldus Corporation; Microsoft, Microsoft Corporation; SnapShot, BioScan Inc.

Circle 329 on reader service card

Lease it with LeaseCard
 Payments between \$500 & \$3999
 Lease terms 24, 36, 48, 60, 72, 84, 96, 108, 120, 132, 144, 156, 168, 180, 192, 204, 216, 228, 240, 252, 264, 276, 288, 300, 312, 324, 336, 348, 360, 372, 384, 396, 408, 420, 432, 444, 456, 468, 480, 492, 504, 516, 528, 540, 552, 564, 576, 588, 600, 612, 624, 636, 648, 660, 672, 684, 696, 708, 720, 732, 744, 756, 768, 780, 792, 804, 816, 828, 840, 852, 864, 876, 888, 900, 912, 924, 936, 948, 960, 972, 984, 996, 1008, 1020, 1032, 1044, 1056, 1068, 1080, 1092, 1104, 1116, 1128, 1140, 1152, 1164, 1176, 1188, 1200, 1212, 1224, 1236, 1248, 1260, 1272, 1284, 1296, 1308, 1320, 1332, 1344, 1356, 1368, 1380, 1392, 1404, 1416, 1428, 1440, 1452, 1464, 1476, 1488, 1500, 1512, 1524, 1536, 1548, 1560, 1572, 1584, 1596, 1608, 1620, 1632, 1644, 1656, 1668, 1680, 1692, 1704, 1716, 1728, 1740, 1752, 1764, 1776, 1788, 1800, 1812, 1824, 1836, 1848, 1860, 1872, 1884, 1896, 1908, 1920, 1932, 1944, 1956, 1968, 1980, 1992, 2004, 2016, 2028, 2040, 2052, 2064, 2076, 2088, 2100, 2112, 2124, 2136, 2148, 2160, 2172, 2184, 2196, 2208, 2220, 2232, 2244, 2256, 2268, 2280, 2292, 2304, 2316, 2328, 2340, 2352, 2364, 2376, 2388, 2400, 2412, 2424, 2436, 2448, 2460, 2472, 2484, 2496, 2508, 2520, 2532, 2544, 2556, 2568, 2580, 2592, 2604, 2616, 2628, 2640, 2652, 2664, 2676, 2688, 2700, 2712, 2724, 2736, 2748, 2760, 2772, 2784, 2796, 2808, 2820, 2832, 2844, 2856, 2868, 2880, 2892, 2904, 2916, 2928, 2940, 2952, 2964, 2976, 2988, 3000, 3012, 3024, 3036, 3048, 3060, 3072, 3084, 3096, 3108, 3120, 3132, 3144, 3156, 3168, 3180, 3192, 3204, 3216, 3228, 3240, 3252, 3264, 3276, 3288, 3300, 3312, 3324, 3336, 3348, 3360, 3372, 3384, 3396, 3408, 3420, 3432, 3444, 3456, 3468, 3480, 3492, 3504, 3516, 3528, 3540, 3552, 3564, 3576, 3588, 3600, 3612, 3624, 3636, 3648, 3660, 3672, 3684, 3696, 3708, 3720, 3732, 3744, 3756, 3768, 3780, 3792, 3804, 3816, 3828, 3840, 3852, 3864, 3876, 3888, 3900, 3912, 3924, 3936, 3948, 3960, 3972, 3984, 3996, 4008, 4020, 4032, 4044, 4056, 4068, 4080, 4092, 4104, 4116, 4128, 4140, 4152, 4164, 4176, 4188, 4200, 4212, 4224, 4236, 4248, 4260, 4272, 4284, 4296, 4308, 4320, 4332, 4344, 4356, 4368, 4380, 4392, 4404, 4416, 4428, 4440, 4452, 4464, 4476, 4488, 4500, 4512, 4524, 4536, 4548, 4560, 4572, 4584, 4596, 4608, 4620, 4632, 4644, 4656, 4668, 4680, 4692, 4704, 4716, 4728, 4740, 4752, 4764, 4776, 4788, 4800, 4812, 4824, 4836, 4848, 4860, 4872, 4884, 4896, 4908, 4920, 4932, 4944, 4956, 4968, 4980, 4992, 5004, 5016, 5028, 5040, 5052, 5064, 5076, 5088, 5100, 5112, 5124, 5136, 5148, 5160, 5172, 5184, 5196, 5208, 5220, 5232, 5244, 5256, 5268, 5280, 5292, 5304, 5316, 5328, 5340, 5352, 5364, 5376, 5388, 5400, 5412, 5424, 5436, 5448, 5460, 5472, 5484, 5496, 5508, 5520, 5532, 5544, 5556, 5568, 5580, 5592, 5604, 5616, 5628, 5640, 5652, 5664, 5676, 5688, 5700, 5712, 5724, 5736, 5748, 5760, 5772, 5784, 5796, 5808, 5820, 5832, 5844, 5856, 5868, 5880, 5892, 5904, 5916, 5928, 5940, 5952, 5964, 5976, 5988, 6000, 6012, 6024, 6036, 6048, 6060, 6072, 6084, 6096, 6108, 6120, 6132, 6144, 6156, 6168, 6180, 6192, 6204, 6216, 6228, 6240, 6252, 6264, 6276, 6288, 6300, 6312, 6324, 6336, 6348, 6360, 6372, 6384, 6396, 6408, 6420, 6432, 6444, 6456, 6468, 6480, 6492, 6504, 6516, 6528, 6540, 6552, 6564, 6576, 6588, 6600, 6612, 6624, 6636, 6648, 6660, 6672, 6684, 6696, 6708, 6720, 6732, 6744, 6756, 6768, 6780, 6792, 6804, 6816, 6828, 6840, 6852, 6864, 6876, 6888, 6900, 6912, 6924, 6936, 6948, 6960, 6972, 6984, 6996, 7008, 7020, 7032, 7044, 7056, 7068, 7080, 7092, 7104, 7116, 7128, 7140, 7152, 7164, 7176, 7188, 7200, 7212, 7224, 7236, 7248, 7260, 7272, 7284, 7296, 7308, 7320, 7332, 7344, 7356, 7368, 7380, 7392, 7404, 7416, 7428, 7440, 7452, 7464, 7476, 7488, 7500, 7512, 7524, 7536, 7548, 7560, 7572, 7584, 7596, 7608, 7620, 7632, 7644, 7656, 7668, 7680, 7692, 7704, 7716, 7728, 7740, 7752, 7764, 7776, 7788, 7800, 7812, 7824, 7836, 7848, 7860, 7872, 7884, 7896, 7908, 7920, 7932, 7944, 7956, 7968, 7980, 7992, 8004, 8016, 8028, 8040, 8052, 8064, 8076, 8088, 8100, 8112, 8124, 8136, 8148, 8160, 8172, 8184, 8196, 8208, 8220, 8232, 8244, 8256, 8268, 8280, 8292, 8304, 8316, 8328, 8340, 8352, 8364, 8376, 8388, 8400, 8412, 8424, 8436, 8448, 8460, 8472, 8484, 8496, 8508, 8520, 8532, 8544, 8556, 8568, 8580, 8592, 8604, 8616, 8628, 8640, 8652, 8664, 8676, 8688, 8700, 8712, 8724, 8736, 8748, 8760, 8772, 8784, 8796, 8808, 8820, 8832, 8844, 8856, 8868, 8880, 8892, 8904, 8916, 8928, 8940, 8952, 8964, 8976, 8988, 9000, 9012, 9024, 9036, 9048, 9060, 9072, 9084, 9096, 9108, 9120, 9132, 9144, 9156, 9168, 9180, 9192, 9204, 9216, 9228, 9240, 9252, 9264, 9276, 9288, 9300, 9312, 9324, 9336, 9348, 9360, 9372, 9384, 9396, 9408, 9420, 9432, 9444, 9456, 9468, 9480, 9492, 9504, 9516, 9528, 9540, 9552, 9564, 9576, 9588, 9600, 9612, 9624, 9636, 9648, 9660, 9672, 9684, 9696, 9708, 9720, 9732, 9744, 9756, 9768, 9780, 9792, 9804, 9816, 9828, 9840, 9852, 9864, 9876, 9888, 9900, 9912, 9924, 9936, 9948, 9960, 9972, 9984, 9996, 10008, 10020, 10032, 10044, 10056, 10068, 10080, 10092, 10104, 10116, 10128, 10140, 10152, 10164, 10176, 10188, 10200, 10212, 10224, 10236, 10248, 10260, 10272, 10284, 10296, 10308, 10320, 10332, 10344, 10356, 10368, 10380, 10392, 10404, 10416, 10428, 10440, 10452, 10464, 10476, 10488, 10500, 10512, 10524, 10536, 10548, 10560, 10572, 10584, 10596, 10608, 10620, 10632, 10644, 10656, 10668, 10680, 10692, 10704, 10716, 10728, 10740, 10752, 10764, 10776, 10788, 10800, 10812, 10824, 10836, 10848, 10860, 10872, 10884, 10896, 10908, 10920, 10932, 10944, 10956, 10968, 10980, 10992, 11004, 11016, 11028, 11040, 11052, 11064, 11076, 11088, 11100, 11112, 11124, 11136, 11148, 11160, 11172, 11184, 11196, 11208, 11220, 11232, 11244, 11256, 11268, 11280, 11292, 11304, 11316, 11328, 11340, 11352, 11364, 11376, 11388, 11400, 11412, 11424, 11436, 11448, 11460, 11472, 11484, 11496, 11508, 11520, 11532, 11544, 11556, 11568, 11580, 11592, 11604, 11616, 11628, 11640, 11652, 11664, 11676, 11688, 11700, 11712, 11724, 11736, 11748, 11760, 11772, 11784, 11796, 11808, 11820, 11832, 11844, 11856, 11868, 11880, 11892, 11904, 11916, 11928, 11940, 11952, 11964, 11976, 11988, 12000, 12012, 12024, 12036, 12048, 12060, 12072, 12084, 12096, 12108, 12120, 12132, 12144, 12156, 12168, 12180, 12192, 12204, 12216, 12228, 12240, 12252, 12264, 12276, 12288, 12300, 12312, 12324, 12336, 12348, 12360, 12372, 12384, 12396, 12408, 12420, 12432, 12444, 12456, 12468, 12480, 12492, 12504, 12516, 12528, 12540, 12552, 12564, 12576, 12588, 12600, 12612, 12624, 12636, 12648, 12660, 12672, 12684, 12696, 12708, 12720, 12732, 12744, 12756, 12768, 12780, 12792, 12804, 12816, 12828, 12840, 12852, 12864, 12876, 12888, 12900, 12912, 12924, 12936, 12948, 12960, 12972, 12984, 12996, 13008, 13020, 13032, 13044, 13056, 13068, 13080, 13092, 13104, 13116, 13128, 13140, 13152, 13164, 13176, 13188, 13200, 13212, 13224, 13236, 13248, 13260, 13272, 13284, 13296, 13308, 13320, 13332, 13344, 13356, 13368, 13380, 13392, 13404, 13416, 13428, 13440, 13452, 13464, 13476, 13488, 13500, 13512, 13524, 13536, 13548, 13560, 13572, 13584, 13596, 13608, 13620, 13632, 13644, 13656, 13668, 13680, 13692, 13704, 13716, 13728, 13740, 13752, 13764, 13776, 13788, 13800, 13812, 13824, 13836, 13848, 13860, 13872, 13884, 13896, 13908, 13920, 13932, 13944, 13956, 13968, 13980, 13992, 14004, 14016, 14028, 14040, 14052, 14064, 14076, 14088, 14100, 14112, 14124, 14136, 14148, 14160, 14172, 14184, 14196, 14208, 14220, 14232, 14244, 14256, 14268, 14280, 14292, 14304, 14316, 14328, 14340, 14352, 14364, 14376, 14388, 14400, 14412, 14424, 14436, 14448, 14460, 14472, 14484, 14496, 14508, 14520, 14532, 14544, 14556, 14568, 14580, 14592, 14604, 14616, 14628, 14640, 14652, 14664, 14676, 14688, 14700, 14712, 14724, 14736, 14748, 14760, 14772, 14784, 14796, 14808, 14820, 14832, 14844, 14856, 14868, 14880, 14892, 14904, 14916, 14928, 14940, 14952, 14964, 14976, 14988, 15000, 15012, 15024, 15036, 15048, 15060, 15072, 15084, 15096, 15108, 15120, 15132, 15144, 15156, 15168, 15180, 15192, 15204, 15216, 15228, 15240, 15252, 15264, 15276, 15288, 15300, 15312, 15324, 15336, 15348, 15360, 15372, 15384, 15396, 15408, 15420, 15432, 15444, 15456, 15468, 15480, 15492, 15504, 15516, 15528, 15540, 15552, 15564, 15576, 15588, 15600, 15612, 15624, 15636, 15648, 15660, 15672, 15684, 15696, 15708, 15720, 15732, 15744, 15756, 15768, 15780, 15792, 15804, 15816, 15828, 15840, 15852, 15864, 15876, 15888, 15900, 15912, 15924, 15936, 15948, 15960, 15972, 15984, 15996, 16008, 16020, 16032, 16044, 16056, 16068, 16080, 16092, 16104, 16116, 16128, 16140, 16152, 16164, 16176, 16188, 16200, 16212, 16224, 16236, 16248, 16260, 16272, 16284, 16296, 16308, 16320, 16332, 16344, 16356, 16368, 16380, 16392, 16404, 16416, 16428, 16440, 16452, 16464, 16476, 16488, 16500, 16512, 16524, 16536, 16548, 16560, 16572, 16584, 16596, 16608, 16620, 16632, 16644, 16656, 16668, 16680, 16692, 16704, 16716, 16728, 16740, 16752, 16764, 16776, 16788, 16800, 16812, 16824, 16836, 16848, 16860, 16872, 16884, 16896, 16908, 16920, 16932, 16944, 16956, 16968, 16980, 16992, 17004, 17016, 17028, 17040, 17052, 17064, 17076, 17088, 17100, 17112, 17124, 17136, 17148, 17160, 17172, 17184, 17196, 17208, 17220, 17232, 17244, 17256, 17268, 17280, 17292, 17304, 17316, 17328, 17340, 17352, 17364, 17376, 17388, 17400, 17412, 17424, 17436, 17448, 17460, 17472, 17484, 17496, 17508, 17520, 17532, 17544, 17556, 17568, 17580, 17592, 17604, 17616, 17628, 17640, 17652, 17664, 17676, 17688, 17700, 17712, 17724, 17736, 17748, 17760, 17772, 17784, 17796, 17808, 17820, 17832, 17844, 17856, 17868, 17880, 17892, 17904, 17916, 17928, 17940, 17952, 17964, 17976, 17988, 18000, 18012, 18024, 18036, 18048, 18060, 18072, 18084, 18096, 18108, 18120, 18132, 18144, 18156, 18168, 18180, 18192, 18204, 18216, 18228, 18240, 18252, 18264, 18276, 18288, 18300, 18312, 18324, 18336, 18348, 18360, 18372, 18384, 18396, 18408, 18420, 18432, 18444, 18456, 18468, 18480, 18492, 18504, 18516, 18528, 18540, 18552, 18564, 18576, 18588, 18600, 18612, 18624, 18636, 18648, 18660, 18672, 18684, 18696, 18708, 18720, 18732, 18744, 18756, 18768, 18780, 18792, 18804, 18816, 18828, 18840, 18852, 18864, 18876, 18888, 18900, 18912, 18924, 18936, 18948, 18960, 18972, 18984, 18996, 19008, 19020, 19032, 19044, 19056, 19068, 19080, 19092, 19104, 19116, 19128, 19140, 19152, 19164, 19176, 19188, 19200, 19212, 19224, 19236, 19248, 19260, 19272, 19284, 19296, 19308, 19320, 19332, 19344, 19356, 19368, 19380, 19392, 19404, 19416, 19428, 19440, 19452, 19464, 19476, 19488, 19500, 19512, 19524, 19536, 19548, 19560, 19572, 19584, 19596, 19608, 19620, 19632, 19644, 19656, 19668, 19680, 19692, 19704, 19716, 19728, 19740, 19752, 19764, 19776, 19788, 19800, 19812, 19824, 19836, 19848, 19860, 19872, 19884, 19896, 19908, 19920, 19932, 19944, 19956, 19968, 19980, 19992, 20004, 20016, 20028, 20040, 20052, 20064, 20076, 20088, 20100, 20112, 20124, 20136, 20148, 20160, 20172, 20184, 20196, 20208, 20220, 20232, 20244, 20256, 20268, 20280, 20292, 20304, 20316, 20328, 20340, 20352, 20364, 20376, 20388, 20400, 20412, 20424, 20436, 20448, 20460, 20472, 20484, 20496, 20508, 20520, 20532, 20544, 20556, 20568, 20580, 20592, 20604, 20616, 20628, 20640, 20652, 20664, 20676, 20688, 20700, 20712, 20724, 20736, 20748, 20760, 20772, 20784, 20796, 20808, 20820, 20832, 20844, 20856, 20868, 20880, 20892, 20904, 20916, 20928, 20940, 20952, 20964, 20976, 20988, 21000, 21012, 21024, 21036, 21048, 21060, 21072, 21084, 21096, 21108, 21120, 21132, 21144, 21156, 21168, 21180, 21192, 21204, 21216, 21228, 21240, 21252, 21264, 21276, 21288, 21300, 21312, 21324, 21336, 21348, 21360, 21372, 21384, 21396, 21408, 21420, 21432, 21444, 21456, 21468, 21480, 21492, 21504, 21516, 21528, 21540, 21552, 21564, 21576, 21588, 21600, 21612, 21624, 21636, 21648, 21660, 21672, 21684, 21696, 21708, 21720, 21732, 21744, 21756, 21768, 21780, 21792, 21804, 21816, 21828, 21840, 21852, 21864, 21876, 21888, 21900, 21912, 21924, 21936, 21948, 21960, 21972, 21984, 21996, 22008, 22020, 22032, 22044, 22056, 22068, 22080, 22092, 22104, 22116, 22128, 22140, 22152, 22164, 22176, 22188, 22200, 22212, 22224, 22236, 22248, 22260, 22272, 22284, 22296, 22308, 22320, 22332, 22344, 22356, 22368, 22380, 22392, 22404, 22416, 22428, 22440, 22452, 22464, 22476, 22488, 22500, 22512, 22524, 22536, 22548, 22560, 22572, 22584, 22596, 22608, 22620, 22632, 22644, 22656, 22668, 22680, 22692, 22704, 22716

Accounting with Inventory you can count on



Now Available for Macintosh.

Automating your bookkeeping and inventory systems shouldn't be confusing. No. Everything should work together and be simple to understand.

That's common sense.

So we created a business accounting and inventory program with the powerful simplicity of the Macintosh. It's complete, affordable, and yes, easy to use.

We call it ACCOUNTANT, INC.

Like the Macintosh, ACCOUNTANT, INC. is smart for your office.

Same quick learning, same immediate results.

We designed it to take the hassle out of accounting and inventory. ACCOUNTANT, INC. covers all of your bookkeeping needs.

You get full-featured Accounts Payable, Accounts Receivable, General Ledger, Inventory, Invoicing, Purchase Orders, Cash Disbursements, and more.

We give you strong, integrated features that provide clear and immediate analysis of your finances.

Make any entry, and everything gets updated automatically.

Even the inventory. ACCOUNTANT, INC.

lets you know if you run low on an item, or run out completely. Because that's good common sense.

Why waste time with difficult accounting software?

\$299.⁹⁵ is your price for instant computing with ACCOUNTANT, INC.

ACCOUNTANT, INC. is not copy protected

Version 2.1 is now available with a new manual.

For Macintosh 512KE, Plus, SE and II Minimum 800K disk drive.

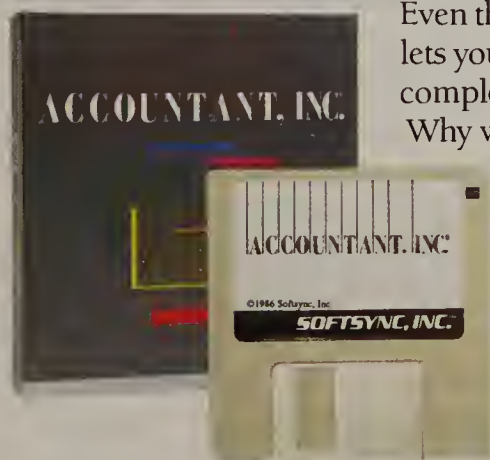
Please call or write for more information.

ACCOUNTANT, INC.

Because Common Sense is Timeless.

Circle 139 on reader service card

Macintosh is a registered trademark of Apple Computer, Inc. Softsync™ and Accountant, Inc.™ are trademarks of Softsync, Inc. Copyright 1987 Bookkeeping has three consecutive sets of double letters.





Telecommunications software for the Macintosh, a new version.

Soar to New Highs, Effortlessly

When Software Ventures set out to create MicroPhone, it had a simple mission: to develop the most intuitive communications software ever written. Indeed, when MicroPhone was born, it was universally hailed as a breakthrough in communications software. A product so friendly, it turned novices into experts. So sophisticated, it became, in the words of MacUser, a power user's delight.

MicroPhone is a legend. One of those precious software creations that single out the Macintosh as a superior computing machine.

With MicroPhone II, Software Ventures has set out to surpass itself: redefine power in telecommunications for years to come.

MicroPhone II is so revolutionary that PC Magazine was moved to say: "MicroPhone II is arguably the best

comm software ever written." We won't have it any other way. MicroPhone II. The freedom to be yourself. At the top.

Critics' Choice

Stewart Alsop, P.C. Letter:

"MicroPhone . . . sets the standards that general-purpose communications software will have to follow."

The New York Times:

"MicroPhone is a breakthrough in communications software . . ."



S O F T W A R E
V E N T U R E S

2907 Claremont Avenue Suite 220 Berkeley CA 94705
415-644-3232

Let's Get Technical

MultiFinder compatible. Supports background file transfer and script execution. Offers a full-featured script language: variables, counters, and expression-analyzer for string and arithmetic operations. Scripts allow: control of all communications settings; screen addressing and text editing; filtering of incoming text.

Supports import and export of scripts as text files. Allows control of PBX's, Hayes and non-Hayes modems through flexible modem drivers. Runs at 50 to 57,600 baud. Emulates DEC VT52, VT100, and TTY type terminals. Mac II and LaserWriter compatible. Works with all Mac large screen monitors. Supports the extended keyboard. Built-in text editor. Includes Glue, licensed from Solutions, Inc.

A Peek at the Laguna



*A leak leads to
a look at Apple's new
portable Macintosh.
Here's looking at you,
Laguna*

Our sister publication, newsweekly *Macintosh Today*, recently scooped every other Mac periodical. An unidentified Apple employee provided a free-lance writer with a copy of a very confidential 160-page report.

What a leak! The report revealed all the technical specs on Apple's prototype of a 12-pound Macintosh SE portable computer code-named Laguna.

Obviously, monthly magazines like *Macworld* differ from news publications like *Macintosh Today*. For one thing, being monthly, *Macworld* has a much longer lead time. In order to view products ahead of their release dates, we often work under a nondisclosure agreement with Apple and with other developers. In this way, we can test the hardware or software adequately and still publish articles to coincide with a product's appearance on the market. By contrast, the news-oriented *Macintosh Today* staff maintains a strict editorial policy of refusing to sign nondisclosures. Their interest is in news as it breaks.

After the Laguna story broke, some inevitable questions were raised: will the leak damage Apple? Will it hurt the Laguna's development? Traditionally, information leaks affect a company's sales, stock prices, and deals in the works. Certain companies deliberately leak information to the press—or "preannounce" a product. IBM often announces its new products as much as a year or two before the actual delivery date, as it did with the Extended OS/2 operating system for its PS/2 line of PCs.

This is a marketing strategy designed to create anticipation for future products; it also tends to freeze customer purchases of competitors' products.

But the recent leak may be different from all other leaks. It was not a deliberate preannouncement on Apple's part. Some disgruntled Apple staffer—or perhaps a third-party developer—took it upon him- or herself to release the highly confidential Laguna report to the world.

Furthermore, this early news of an exciting, but anticipated, development is not likely to benefit any of Apple's competitors. After all, no one is making Macintosh

clones. How could anyone be developing a rival Macintosh laptop?

It's not likely that the laptop leak will hurt Macintosh sales, either. If the Laguna were a new desktop computer with more capabilities than the current line of Macs, users might quit buying them and wait for the new machine.

But since it's a laptop, that's not likely to occur. Most people who own laptops already have desktop computers. A portable is usually the second computer you acquire. It's the one you take on trips, or to meetings. So the biggest market for the Laguna is likely to be those people who already own Macintoshes.

While I doubt that Apple engineered its own leak, I do think the Laguna affair will actually benefit the company. Macintosh users who really want to buy a portable computer will probably prefer a Macintosh to the existing MS-DOS laptops. If anything, the leak may hurt some of the laptop makers, like Toshiba and Zenith, who are making a killing in this \$1 billion market.

Now that the secret of the Laguna is out, I must say that it looks like a very exciting product—I can't wait to get my hands on one. One feature I really like is the proposed trackball input device, which you would use instead of a mouse to control the cursors.

In addition, the 1-megabyte static RAM machine features a 16-MHz 68HC000 chip that is twice as fast as the 68000 chip an SE sports. Yet the new chip consumes only one-tenth of the power. At 12 pounds, the Laguna is truly a lightweight portable. The lead-acid battery inside weighs 5 pounds, but it can run up to eight hours before it needs recharging. Most MS-DOS laptops run for only two or three hours before their batteries go dead.

Some additional specs: the Laguna uses one or two 2MB 3½-inch double-sided drives. Apple plans to offer an optional compact CMOS Hayes-compatible

(continues)

You have to be crazy to buy Business Filevision.

Crazy 3M. Crazy Ford. Crazy DuPont. Crazy Boeing.
Crazy Sears. Crazy Westinghouse. Crazy Apple.
Crazy like foxes.

An impressive list of major companies and government agencies that use the Macintosh™ own Business Filevision, the graphic file management system. And they're still ordering copies today. Because Business Filevision will do things that no other program can.

Not even HyperCard™

So what is Business Filevision, anyway? It's a data base program that stores data using graphics as file directory devices. In other words, you could create (or import) a map of sales territories, click on a territory, and reveal information about it.

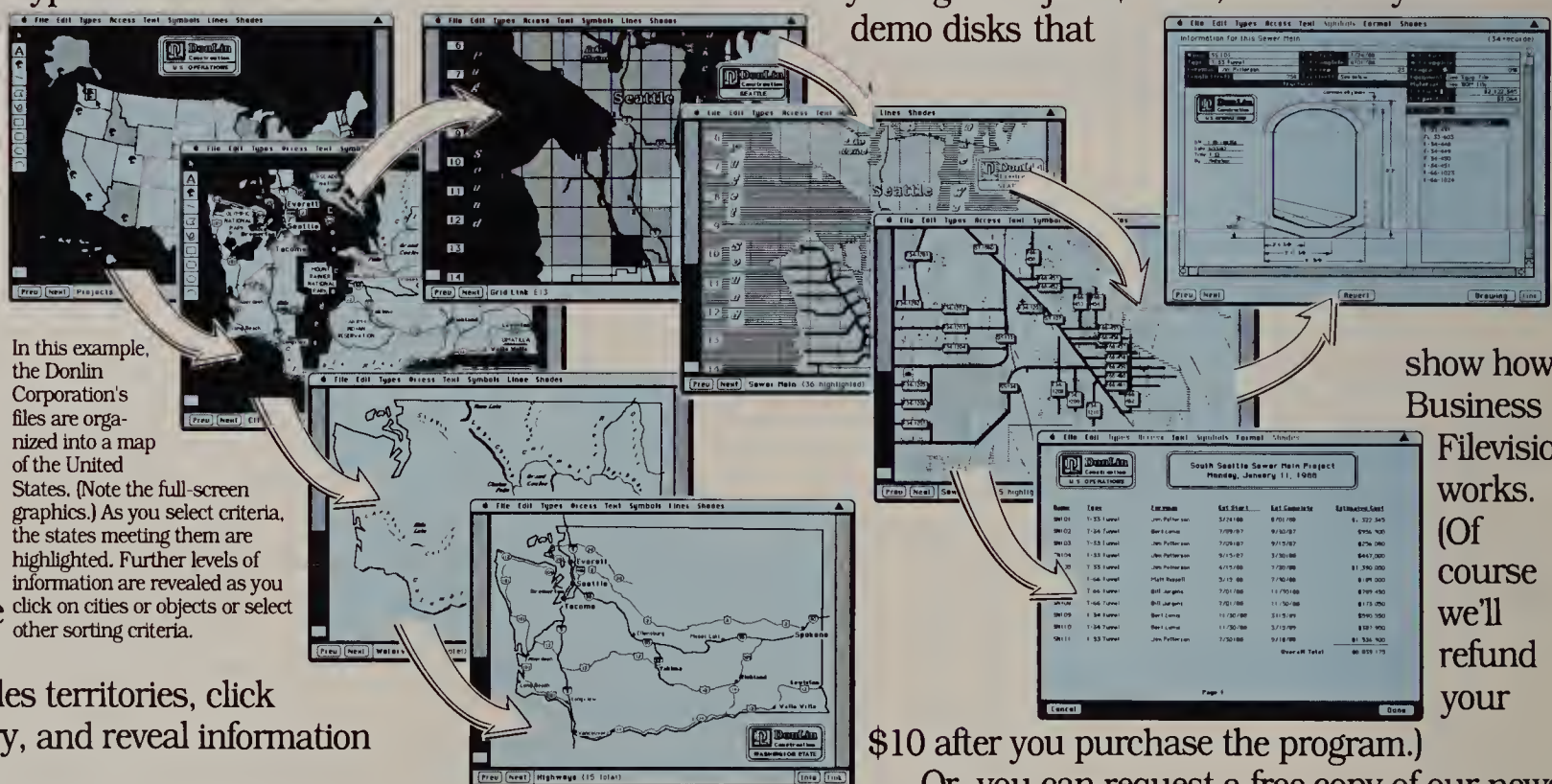
More important, unlike other programs that seem to do similar things, it allows you to select several criteria so that you can sort and analyze data 'behind' the images. You can incorporate computed fields and statistics. And you get real flexibility in

reporting. All without learning a programming language.

From the beginning, Filevision was so revolutionary, people were at a loss to describe it, but they were crazy about it. AFIPS* gave it their "Outstanding Software Product of the Year" Award.

Do we expect you to just plunk down your money for a powerful program on the basis of a few advertising claims? We're not crazy.

But if you'll give us just \$10.00, we'll send you two demo disks that



show how Business Filevision works. (Of course we'll refund your

\$10 after you purchase the program.)

Or, you can request a free copy of our newsletter. It discusses databases our users have created.

Better yet, visit your software dealer and ask for a demonstration.

We're betting that when you see it, you'll be crazy to buy Business Filevision.

BUSINESS FILEVISION®

The Pioneer in HyperGraphics.

Marvelin Corporation

3420 Ocean Park Boulevard, Suite 3020
Santa Monica, CA 90405 (213) 450-6813

*Who is AFIPS? The American Federation of Information Processing Societies. In other words, the MIS Managers of Corporate America. You know how impressed they are with Macs, right? So we think their endorsement is pretty significant. © 1988 Marvelin Corporation. Macintosh and HyperCard are trademarks of Apple Computer, Inc.

Circle 80 on reader service card

Some people will try to tell you that one product will fit every Macintosh application.

WHY WE DON'T MAKE JUST ONE LURE FOR EVERY FISH IN THE SEA.



If you're like most people,
you don't try to use a spread sheet for word processing.
You have applications tailored for the task at hand.

Introducing The Big Picture® Macintosh Display Systems From E-Machines.™

At E-Machines, we don't think all Mac users are trying to catch the same fish. That's why we make a complete range of large displays, and one that's just right for you.

For the Macintosh SE and Plus, we recommend our unique landscape-format monochrome display, *The Big Picture*. For the Macintosh II, depending on the application, we offer *The Big Picture* monochrome; *The Big Picture IQ™* grey scale display; *DoubleColor™* low-cost, full page color display card; *The Big Picture CX™* 17 inch color; and the *The Big Picture C20™* 20 inch color display systems.

So if you're casting about for a large screen, give us a call at (503) 646-6699. Tell us your application and interests and we'll help you find the Apple dealer that can install your new display.



E-MACHINES

9305 S.W. Gemini Drive
Beaverton, OR 97005
(503) 646-6699

©1988 E-Machines. The Big Picture is a registered trademark, and The Big Picture IQ, DoubleColor, Double Feature, The Big Picture CX, and The Big Picture C20 are trademarks of E-Machines, Inc. Apple and Macintosh are trademarks of Apple Computer, Inc. Multisync is a trademark of NEC. Excel is a trademark of Microsoft.

Circle 101 on reader service card



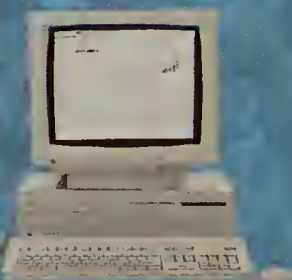
The Big Picture CX showing color CAD drawings.



The Big Picture with Double Feature software displaying word processing and spreadsheet.



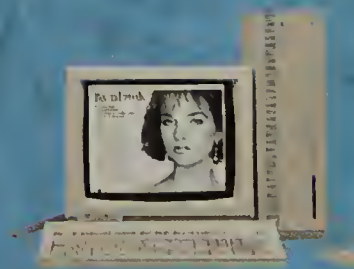
The Big Picture C20 displaying a color scanned photograph.



The Big Picture for the Macintosh II showing Excel™ spreadsheet.



DoubleColor card showing full page presentation running on NEC Multisync™ Plus.



The Big Picture IQ™ photographic image quality grey scale monitor



"Learn Software fast—
without reading anything!"
Professor MacTeach

Learn Software the EASY Way!



Audio Tutorials Available For:

◆ HyperCard™

◆ Excel™

◆ Word™

◆ PageMaker™

◆ MORE™

◆ Works™

Quick and Easy

Each tutorial can be completed in about an hour. You learn by hearing and doing. Friendly instructors on an audio tape talk you through the software program and have you try new skills as they are introduced. Each tutorial is available for less than \$50.

YES, send me
more information
on the tutorials
from Personal
Training Systems.

Name

Company

Address

City

State

Zip code

Daytime telephone

Number of Macs in your office



**Personal
Training Systems** P. O. Box 54240, San Jose, CA 95154

(408) 559-8635

You are welcome to call collect!

Circle 42 on reader service card

David Bunnell

modem that fits inside the Laguna's CPU. (It can handle 300, 1200, and 2400 bits per second.) The laptop also comes with terrific graphics and sound. In fact, it features the same sound chip as the Mac II.

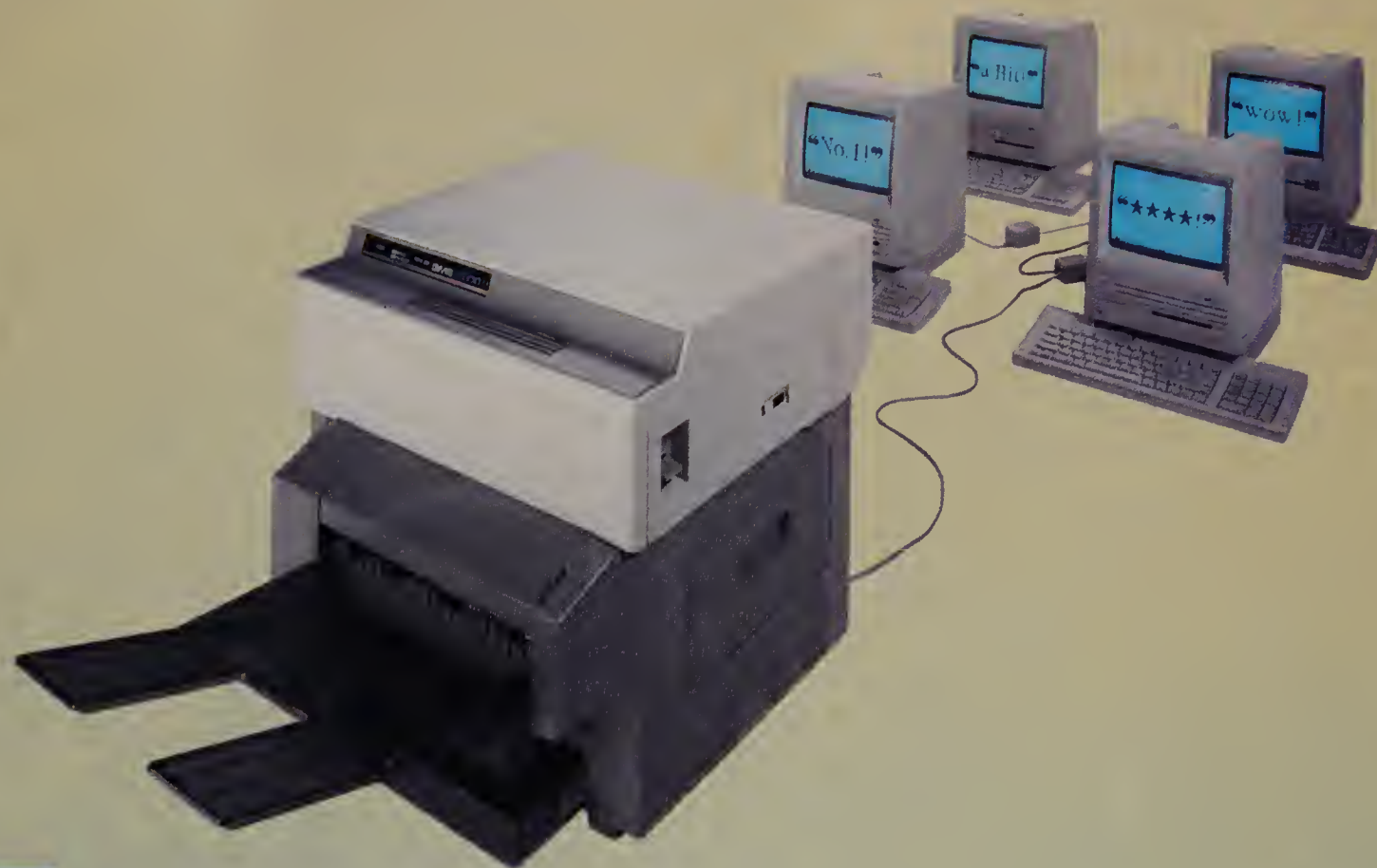
One of the biggest problems with current portable computers is the display technology. The screens simply aren't as readable as they should be. Existing technology requires time-consuming multiplexing of many electrical wires to maintain the display, even at low resolutions. The Mac laptop will have an active matrix screen—the first for a computer. Active matrix uses very few input wires. It turns individual pixels on and off with transistors just the way a memory chip turns its bits on and off. The Laguna's specs call for a 9½-inch reflective flat-panel screen, with an incredible 640-by-400-pixel resolution. (In contrast, the resolution on the SE is 512 by 342 pixels.)

Maybe Apple has come up with an innovative solution to the perennial flat-screen problem. On the other hand, the manufacturing cost for active matrix screens is very high—at least \$500 to \$1000 per screen, even in quantity. We don't know if Apple has found some magic way of obtaining them for less, but it will still have to purchase them from outside.

Because of the screen cost and the advanced nature of the machine overall, the Laguna may end up being a pretty expensive piece of hardware, possibly retailing for about \$6000. It's not clear to me how many people would actually be willing to pay such a premium price for a laptop—even a Macintosh laptop. Until the prices start to come down (probably two or three years after its introduction), the Laguna may well be the laptop "for the rich of us."

Even so, I think the machine marks the next big step along the way to realizing the vision of the Dynabook portable computer, which Apple Fellow Alan Kay has been talking about for years. In the not-very-distant future, we're going to have computers we can carry around like books. We'll just open our notebook-size personal computers, and one side will have a keyboard and a trackball; the other side will hold the screen. These machines will be extremely lightweight. You'll be able to take them anywhere.

Until that wonderful day, I do wish I knew when—and if—the Laguna will be out on the market. John Sculley, won't you call and tell me the details? I won't tell a soul, I promise. I can keep a secret. □



The PostScript laser printer sure to get high ratings at its network debut.

The new 8-page/minute QMS-PS 800 II laser printer

The QMS-PS® 800 II is an 8-page-per-minute laser printer that combines the desktop publishing power of Adobe PostScript® with the superior printer technology of QMS, a leader in printer technology for 10 years. Exceptional paper handling, faster processing speed and a Canon® CXD® print engine with 10,000-page-per-month duty cycle give QMS-PS 800 II the versatility your Macintosh™ network needs.

A network sensation QMS-PS 800 II holds 500 pages, so operators aren't constantly refilling depleted paper trays. Users can even designate automatic switching between the two trays for doing letterhead/second page printing. Select faceup or facedown collation. And manually feed odd-sized paper stock.

With QMS ASAP™ (Advanced System Architecture for PostScript) proprietary technology, QMS-PS 800 II delivers outstanding performance. In fact, the more complex the page, the more it outperforms other PostScript printers. Two megabytes of memory, expandable to three megabytes, also add to the overall page processing speed when you are creating complex documents.

Type casting The QMS-PS 800 II comes with 35 resident typefaces (you can download more if you like). PostScript allows you to scale type to virtually any size, from minuscule to mammoth. PostScript also enables you to design, and redesign, your documents with exacting detail. You have total control over the final appearance of documents, with the ability to place text and graphics anywhere on the page. In short, you get the complete desktop publishing power that only PostScript can give you.

Critical acclaim The QMS-PS 800 II is certain to receive rave reviews on your network. And for a single-user set-up, there's the QMS-PS 810 laser printer. For a demonstration of either, call **1-800-523-2696** for the location of the Laser Connection dealer nearest you. And be sure to ask for *The Sourcebook*™ – our exclusive catalog filled with the latest laser printer products and enhancements.

**LASER
CONNECTION™**
A QMS® Company

© 1987 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Apple II, and Macintosh are trademarks of Apple Computer, Inc., registered in the U.S. and other countries. Microsoft and Windows are trademarks of the Microsoft Corp.

Apple II and Macintosh are trademarks of Apple Computer, Inc., registered in the U.S. and other countries. Microsoft and Windows are trademarks of the Microsoft Corp.



How to turn a Macintosh into the ultimate conversation piece.



AppleShare turns a Macintosh Plus, SE or Macintosh II into a high performance file server. Add AppleShare PC software and an AppleTalk PC card to your MS-DOS computers and Macintosh will gladly talk to them too.

With AppleShare™ you can make Macintosh® a dazzling conversationalist that can talk with as many as fifty other computers. Even if some of those computers can only speak MS-DOS.

Completely integrated with the Macintosh Finder™, our AppleShare file server works the way Macintosh works. So everyone on your AppleTalk® network can have access to shared documents, programs and templates exactly as if they were stored on their own hard disks.

In addition to sharing your information, AppleShare also lets you protect it.

Every time you create a folder, AppleShare lets you decide how (or if) its contents are to be shared. AppleShare access controls let you

grant rights to individuals, a group or everyone on the network at three privacy levels: see folder; read documents within a folder; make changes to the documents in the folder.

Because AppleShare is the Apple standard for file sharing, any software with the label, "AppleShare Aware" will run smoothly and transparently right across your network.

And you can expect to see some very powerful new "AppleShare Aware" multi-user and multi-launch programs by software companies like Microsoft and Aldus.

The AppleShare file server also offers you a "waste not" upgrade path. Small workgroups can start on a Macintosh Plus or SE. When the network's needs expand, transfer the server to a Macintosh II. And put the other Macintosh back to work as an individual workstation.

Larger groups can even work with multiple servers on one network. Simply go to the Chooser to select the server you want, just as you would select a LaserWriter® printer.

Find out more about how AppleShare can get all of your computers talking to each other.

Call 800-446-3000, extension 600 for the name of an authorized Apple reseller. And start a dialogue that everyone can work with.



The power to be your best.™

EPIC 2400II EPIC 2400SE

**PREMIUM INTERNAL
2400 BAUD MULTI-SPEED MODEMS**

**Macintosh II™
Macintosh SE™**

		2400
	2400	2400
	2400	2400
2400	2400	2400
2400	2400	2400
2400	2400	2400
2400	2400	2400
2400	2400	2400
2400	2400	2400



Also available from Epic:

Epic 2400Plus™

- 2400 Baud External Modems
- Compatible with any Computer's modem/serial port

1-800-634-9992

5680 Stewart Avenue
Fremont, California 94538
415-683-0932

Macintosh is a registered trademark of Apple Computer Inc.
Epic, the Epic logo, Epic 2400II™, Epic 2400SE™ and
Epic 2400Plus™ are trademarks of Epic Technology, Inc.

Letters

A forum for Macworld readers

Of Time and Space

In David Bunnell's column "The Second Coming of Steve Jobs" (January 1988), he refers to the Macintosh as "four light-years old." Light-years is a measure of distance, not time. A blunder like this is light-years below the technical level at which *Macworld's* writing should be.

Doug Currie
Londonderry, New Hampshire

David Bunnell responds: "You're right, I was wrong. Time isn't distance; it's actually money."

Credit Where Credit Is Due

In his January 1988 editorial, David Bunnell says that "the mouse, *Windows*, pull-down menus, and the graphics interface were invented at Xerox PARC." Wrong. The mouse and windowing were developed by Doug Engelbart and the talented group he worked with at SRI International in the sixties and early seventies. No one should question the tremendous contributions made by PARC and Apple, but it all started with Doug. It's high time his efforts were recognized.

David A. Potter
Princeton, New Jersey

Corrections

The mystery woman in the photograph accompanying "Mac Business Tools" (February 1988, page 291) is Lisa R. Burton of Ventura, California, a certified forms consultant who uses the Mac to produce complex forms for her clients.

MacNosy (mentioned in Reviews, February 1988, page 203) is not shareware; it's sold by Jasik Designs (415/322-1386) for \$90, \$170 with a debugger. The Mac II version is \$350.



A point well taken. Doug Engelbart definitely deserves recognition for his pioneering contributions to personal computing. In fact, we featured him in two previous Macworld articles: "The Macintosh Family Tree" (November 1984) and "Hypermedia" (March 1986).—Ed.

Clarifying Addresses

One item in your review of Desktop Express (*Reviews*, October 1987) needs clarifying. When you prepare to send mail to an address you're unsure of, before logging on to MCI Mail you should uncheck the Automatic Send/Receive checkbox and then watch for any incorrect addresses to be displayed. You can either select one of the alternate choices (each address can have up

to 20) or skip over it to ensure that the other addressees receive the message.

Greg Gerdy
Dow Jones & Company
Princeton, New Jersey

Well, that neatly dispenses with the "one major flaw" we found in Desktop Express. Sorry for the oversight.—Ed.

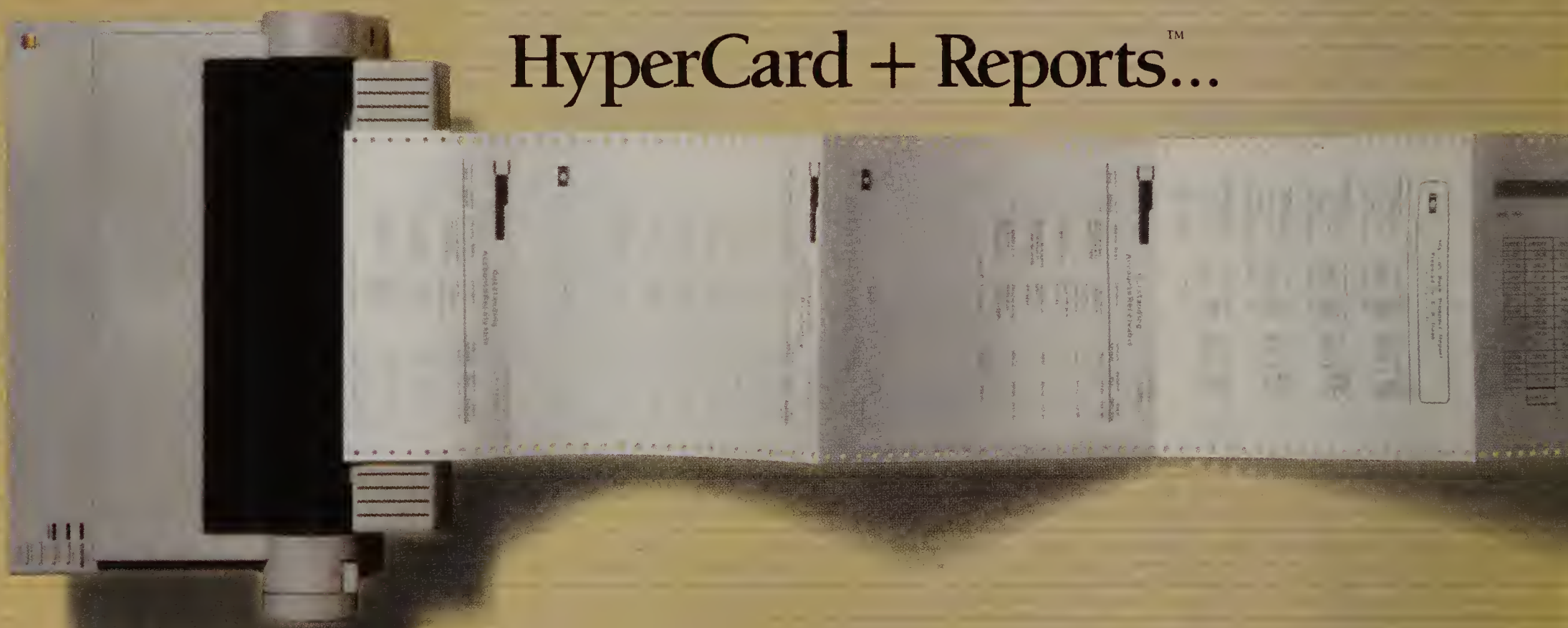
Tracking Updates

Your review of Time Logger 2.11 (*Reviews*, November 1987) compared that product to an outdated version of ours, MacInUse 1.0.

(continues)



HyperCard.™

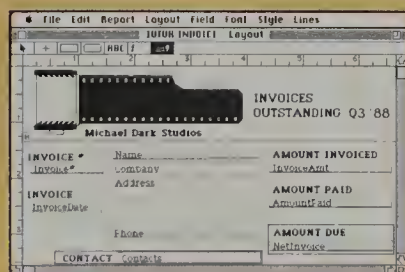


HyperCard + Reports™

The Proof is in the Printouts

Use *Reports* to Organize and Print HyperCard Data

Don't let HyperCard limit you to just printing cards and stacks, columns and rows. Get *Reports*, the Complete Report Generator for HyperCard. With *Reports*, you can select whatever you want from your HyperCard data, then print it any way you want: reports and phone lists, invoices and checks, mailing labels, Rolodex® cards, summaries and much, much more. Organize and analyze information in thousands of ways, with 5 levels of sorts and breaks, 8 selection criteria, totals, subtotals, averages and other detail summaries. Design print-outs with pizzazz, using a custom layout editor with flexible formatting, variable fonts and character styles. Plus graphics—paste in pictures from your HyperCard stacks, scrapbooks, or other applications, or use the built-in drawing tools.



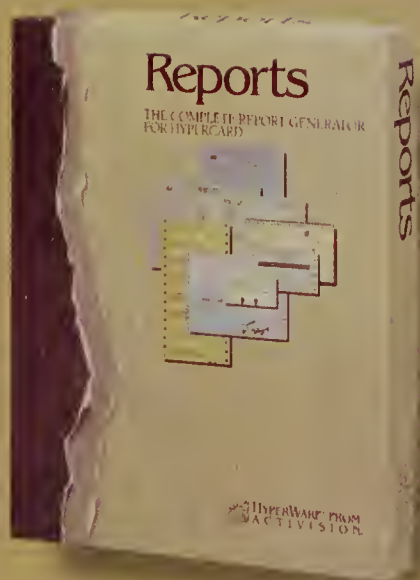
With the easy-to-use layout editor in Reports, what you see is what you'll print.

If you use HyperCard, you need *Reports*.
It will turn your HyperCard data into useful
information, any way you look at it.

How to order: Ask your retailer for *Reports*
or, to order direct, call 800-345-2888,
Operator 300. \$99.95 suggested retail price.

© 1988 Activision, Inc., P.O. Box 7287, Mountain View, CA 94039. *Reports* and
HYPERWARE are trademarks of Activision, Inc. Apple, HyperCard, and Macintosh are
trademarks of Apple Computer, Inc. Rolodex is a registered trademark of Rolodex
Corporation.

Circle 464 on reader service card



Reports™

The Complete Report
Generator for HyperCard

 **HYPERWARE™ FROM
ACTIVISION.**



Elegant protection for your investment . . .

Designer Products, Inc.
Tulsa, Oklahoma

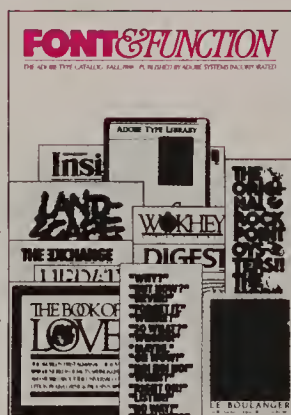
Dust covers available in Ultrasuede, Denim, and Versatech
800-223-2687 • Oklahoma, 918-299-1808

Circle 443 on reader service card

THE BEST TYPE BOOK MONEY CAN BUY.

This priceless professional tool is yours *free*. Simply mail the coupon below. Or call Adobe Systems toll-free.

Adobe, developers of the Adobe™ Type Library and PostScript® software, is the world's leader in electronic publishing. This full-color, 11"x15", 32-page "Font & Function" catalog is jam-packed with helpful tips and problem-solving advice from Adobe type and design experts. It features



samples, interviews, and more than 210 high-quality Adobe typefaces described in detail.

Get yours today. **FREE**. Just call 800-29-ADOBE. In Alaska and Canada, call 415-962-2100. Or write Adobe Systems, P.O. Box 7900, Mountain View, CA 94039-7900.



PostScript is the registered trademark and Adobe is the trademark of Adobe Systems Incorporated.

FREE.

To receive your "Font & Function" Adobe Type Catalog, mail to: Adobe Systems, P.O. Box 7900, Mountain View, CA 94039-7900. Please allow 4 weeks for delivery.

NAME _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

PHONE _____

MW _____

Circle 2 on reader service card

Letters

The current version of MacInUse (2.0) tracks time in the Finder and provides additional Finder information. It also has an F-key feature that allows writing to the file, even within an application. You can access the MacInUse log file with a manual procedure similar to Time Logger's. Only if you're using MacInUse's predefined templates must all files be in the same folder.

Michael A. Bonnice

SoftView, Inc.

Camarillo, California

At the time the review was written, MacInUse 1.0 was the only released version. Unfortunately, the procedures involved in producing a review—product testing, writing, editing, and magazine production—consume so much time that sometimes a review of an older version appears after the release of a new version. We did, however, report version 2.0's new features in our September 1987 Updates. —Ed.

Software Exchange

I'm a Mac owner who has no access to either a bulletin board service or a user group, so I'm trying to establish an ESBM: exchange of software by mail. Anyone who sends me up to three disks (single- or double-sided) of public domain software plus 39 cents per disk for postage will get back the same number of disks containing new programs—games, utilities, DAs—or anything else you request.

ESBM c/o Daniel Levy

1058-F 27th Ave. SE

Minneapolis, MN 55414

See "Users Friendly" in this issue for names of user groups that provide extensive public domain listings by mail. —Ed.

A Familiar Face

The latest TV show starring a Macintosh: "MacGyver" on ABC. An episode I saw featured an SE running Mac-a-Mug that was hooked up to an ImageWriter II—and best of all, they actually used it.

Lloyd J. Quellette

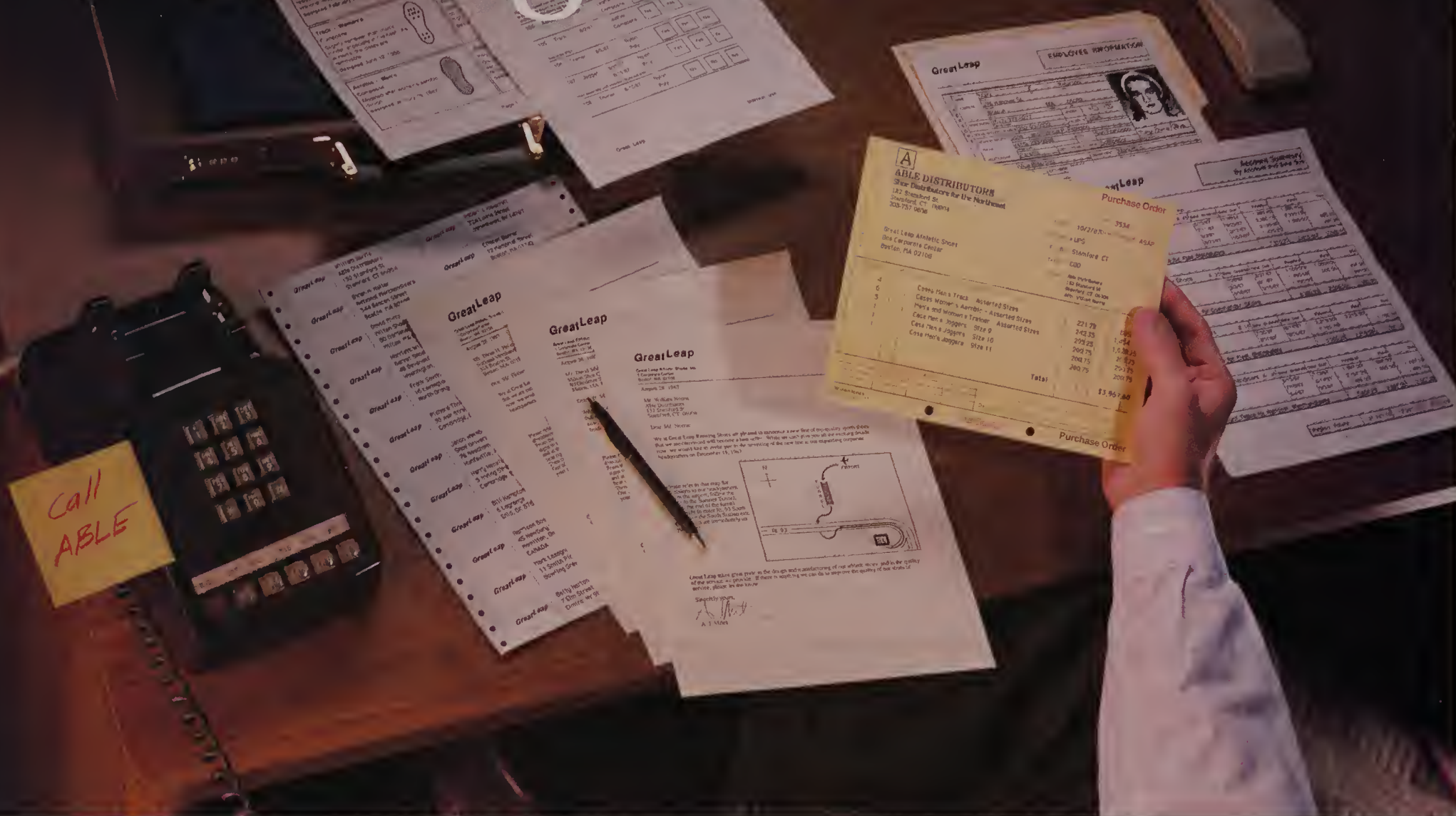
Kenai, Alaska

Designer Charts

Michael Alexander's excellent "Mac Charting Tools" in the January 1988 issue not only described how to get the most out of Excel's charting capabilities but also devoted much space to good graphic design.

(continues)

Keep your business running true to form



FileMaker Plus. The data base and forms manager from Nashoba Systems.

The winner of top awards from both MacUser and Macworld is now the top-selling data base manager for the Macintosh.[™] And for good reasons.

FileMaker[®] Plus is the first product for the Macintosh to combine professional data base management with the ability to produce professional quality forms.

FileMaker Plus makes it easy to quickly create any type of form you want: number-heavy forms like invoices, purchase orders and expense reports; and text-heavy forms like contracts and form letters. You can arrange drawings, photos, text, numbers, logos, and dates anywhere on the page for maximum impact, then preview what you've done on the screen to make sure it's exactly what you want. FileMaker Plus even includes templates for creating mailing labels, proposals, and Rolodex[®] cards.

FileMaker Plus makes managing your data base just as easy. It automatically indexes every word, number and date you enter. You can look up pricing information and quickly calculate, sort, and summarize your invoices, automate your sales reports, produce contact lists, form letters, and mailing labels. All from the same data, without retyping. You can also exchange information with other applications, like Microsoft[®] Word, Excel, MacWrite[®], MacPaint[™], and MacDraw[™] to help you share information and formats.

And FileMaker Plus is on friendly terms with the entire Macintosh family, including the Macintosh 512K, Macintosh Plus, Macintosh SE as well as the Macintosh II, the ImageWriter[®] II and LaserWriter[®] Plus, and the latest system software, such as MultiFinder[™] and AppleShare[™].

Nashoba Systems is just as committed to FileMaker Plus today as we were when we first developed it. We'll continue to do all the things that have made it such a success: listen to our customers, provide outstanding free technical support, upgrade our product with the most advanced technology in an easily accessible form, and assure your satisfaction

with our money-back guarantee.*

FileMaker Plus from Nashoba Systems. For only \$295, it keeps your business running in top form.

Call us today for the dealer nearest you. 1-800-274-0610.



© 1987 Nashoba Systems, Inc. FileMaker is a registered trademark of Nashoba Systems, Inc. ImageWriter, LaserWriter and MacWrite are registered trademarks of Apple Computer, Inc. AppleShare, MacDraw, Macintosh, MacPaint and MultiFinder are trademarks of Apple Computer, Inc. Microsoft is a registered trademark of Microsoft Corporation. Rolodex is a registered trademark of Insilco. *Money-back guarantee is available for thirty days from date of purchase. Details available upon request.

Circle 72 on reader service card

Our Corporate Philosophy:



Remove the barriers between you and your work.
PowerStation™ is a Finder alternative that lets you organize your work for fast and easy access to applications and documents.

PowerStation™

software supply
599 N. Mathilda Ave.
Sunnyvale, CA 94086
(408) 749-9311

Compatible with MultiFinder. Suggested retail price \$59.95. Order from your favorite software retailer or call (800) 443-0100, ext. 451. This number is for credit card orders only. \$3.50 shipping/handling charge per order.

Circle 415 on reader service card

Letters

Another worthwhile source on that topic is Edward R. Tufte's *The Visual Display of Quantitative Information*, available for \$34 from Graphic Press, Box 430, Cheshire, CT 06410.

Richard S. Russell
Madison, Wisconsin

Going Downhill

The colorful "Racing Downhill" chart ("Mac Charting Tools," January 1988) is a glaring example of the carelessness the author cautions against. Because the times in the vertical axis were labeled in minutes rather than seconds, the Olympic skiers appear to have raced down the slopes about 60 times more slowly than they actually did.

As graphic artists, if we don't strive to raise our professional standards, what we see racing downhill might just be our credibility as visual communicators.

Stephen Sedam
Mountain View, California

Right. A tip we left out: always proofread your charts again after final pasteup.
—Ed.

A Database for the Masses

I suspect that many critics of Ashton-Tate's dBase Mac are earning megabucks developing accounting, inventory, and other applications using dBase III Plus on the PC, and have similar aspirations for the Mac. The majority of database users are not application developers but secretaries and clerical workers who must consult a programmer every time they're asked to produce a new type of report.

What I first saw of dBase Mac convinced me that it might actually be a database for the end user rather than a gold mine for the programmer. As an MIS manager, I'd rather my clerical help were able to create their own databases and specialized reports; and as head of microcomputer support, I'd like to know how well each of the Mac database packages rates from the user's perspective.

Ann Albach Meyer
Austin, Texas

As you suggest, dBase Mac seems to be geared more to the average user than the developer (see Reviews, March 1988). We'll be running features on file managers and relational databases in upcoming issues. —Ed.

(continues)

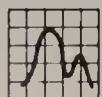
Limited
time price \$119

MacSS™

Macintosh **STATISTICAL SYSTEM**

- Unlimited size of data files, double precision calculations, mainframe speed
- Complete statistical data-base management with spreadsheet
- Comprehensive selection of Descriptive, Basic, and Nonparametric statistics
- Crosstabulation and Frequency Tables
- General Multiple Regression with Forecasting (up to 50 predictors)
- General ANOVA/ANCOVA (up to 10 within/between factors)
- General (multifactor) MANOVA (up to 100 dependent variables)
- Discriminant Function Analysis
- Contrast Analysis
- Graphics and Exploratory data analysis
- Flexible selection of subsets of cases for each analysis
- Easy import/export of data and output; can access files created by spreadsheets and data-bases
- True Macintosh user interface (not a mainframe adaptation)

Available from your dealer or from StatSoft (\$245 + \$5. sh/h)
limited time offer: \$119 + \$5. sh/h

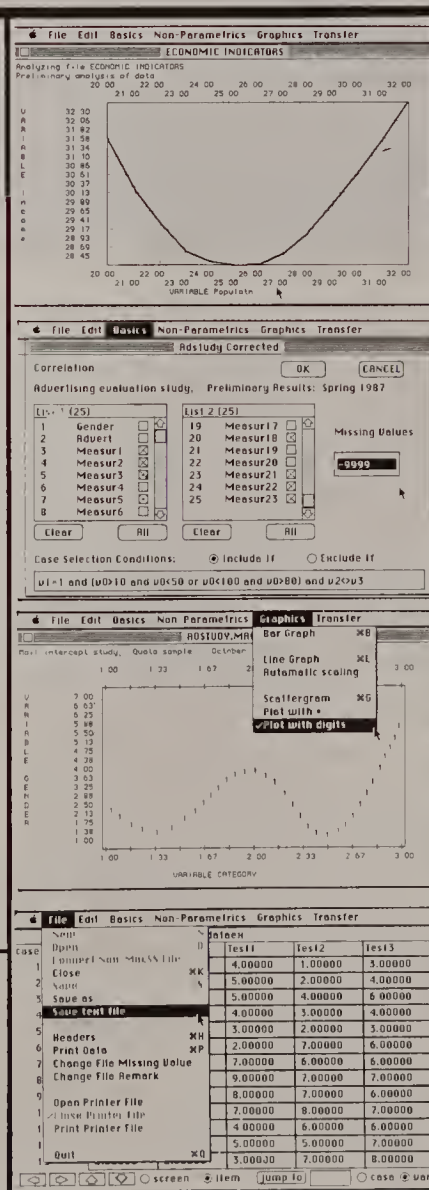


StatSoft™



2325 East 13th Street, Tulsa, OK 74104

(918) 583-4149



Circle 227 on reader service card

POWERFUL TIME BILLING & MAIL LIST FOR YOUR MAC!

LEGAL BILLING

Legal Billing is a time billing package designed specifically for attorneys and accountants. **Legal Billing** is a full featured system, and yet it is incredibly easy to use. Most firms are up and running in 30 minutes or less!

Here's what **Legal Billing** can do for your office:

- ▶ Allows simple and fast entry of information, automatically sorted by date, client, employee and activity
- ▶ Customized productivity reports
- ▶ Automatic interest added to past due balances
- ▶ Client statements formatted in most any way
- ▶ Multiple billing rates for each employee
- ▶ Aging Report can be customized
- ▶ True Work-In-Progress feature holds activity details from month to month

\$595.

LEGAL BILLING II

Legal Billing II is an easy-to-use, advanced system designed for small to medium size firms. Includes all features of the basic system plus much more!

- ▶ Full trust account reporting
- ▶ Archiving of billed services and costs
- ▶ Additional billing options
- ▶ Handles more employee and activity codes
- ▶ Multi-user option available



\$895.

\$1295. Legal Billing II +
- Multi-user version

NEW
from Satori Software

PROJECT BILLING

Project Billing is a time billing package designed for ad agencies, graphic designers, architects and engineers. This package will track all aspects of your project billing including budgets for time and expense, actual costs and billed out amounts for both employee and expenses, and project profitability.

It will also automatically mark-up expenses, and provide productivity reports by employee or project, plus print your client bills in a variety of formats.

This is how **Project Billing** can help you office:

- ▶ Tracks employee productivity by cost and billable rates
- ▶ Automatically marks up expenses
- ▶ Provides profitability analysis by project
- ▶ Tracks budgeting of time and expense
- ▶ Prints bills and adds interest
- ▶ Work-In-Progress holds detail from month-to-month
- ▶ Enables progress (partial) billing, while holding all detail
- ▶ Multi-user option available

\$695.

\$1095. Project Billing +
- Multi-user version

BULK MAILER

NEW VERSION! Bulk Mailer is a powerful program specially designed for managing lists. **Bulk Mailer** does everything you want in a mail list program, including duplication elimination, zip and alpha sorts, 1 to 4 up labels printed, easy-entry defaults, multiple label format, plus, much, much more.

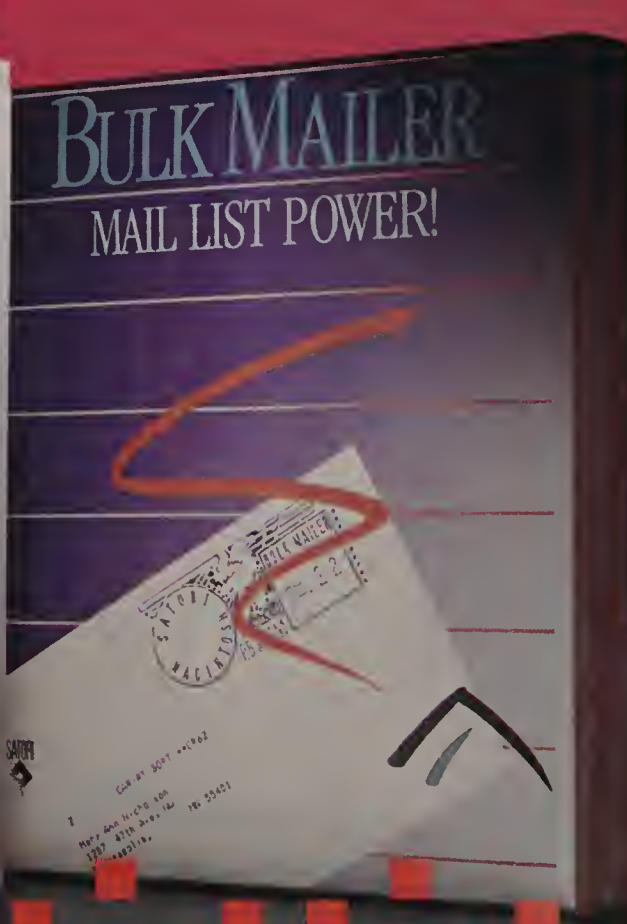
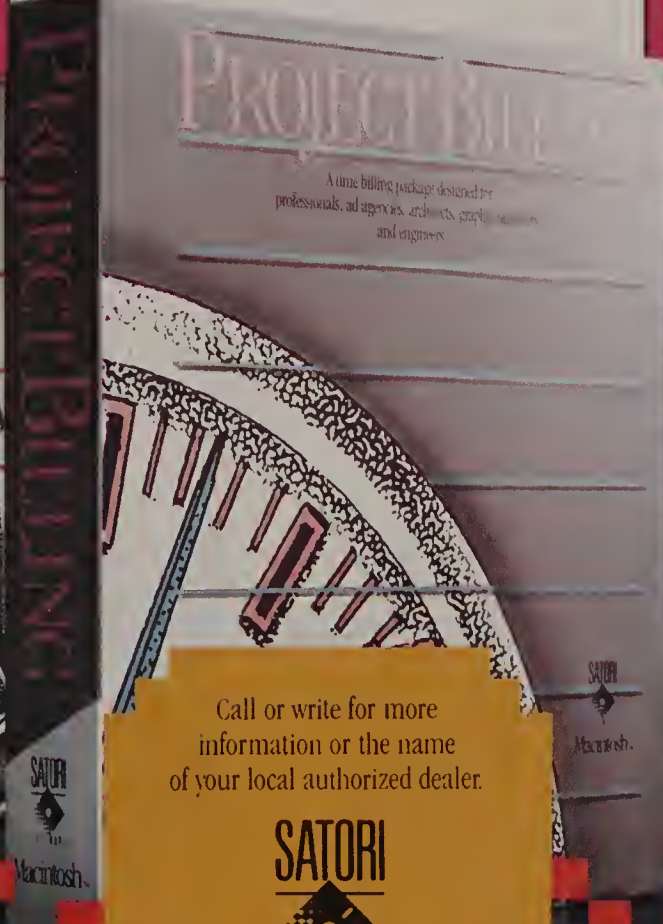
This is the only program to offer all these features:

- ▶ Duplication elimination
- ▶ Zip or alpha sort
- ▶ Car-rt sort or zip + 4
- ▶ 1 to 4 up labels or roster format
- ▶ Powerful coding capabilities
- ▶ Sophisticated global editing and deleting
- ▶ Mail merge with Microsoft Word
- ▶ Easy-to-use entry defaults
- ▶ Coding and date expiration fields
- ▶ Large record capacity (up to 90,000 names)
- ▶ Hard disk compatible

Now shipping version 3.0

\$149. Bulk Mailer
- up to 8,600 names

\$350. Bulk Mailer +
- up to 90,000 names



Call or write for more
information or the name
of your local authorized dealer.



Satori Software
2815 Second Avenue, Suite 590
Seattle, WA 98121 206/443-0765

*The Eagle Design
postage meter and
without printed in-
formation is a regis-
tered service mark of
Pines Bowes Inc.

QUALITY, NOT COST

GET MORE FROM YOUR MACINTOSH™ INVESTMENT

MASS STORAGE

INTERNAL DRIVES

For Macintosh SE,II	
OME 45i- 45 Megabytes	\$899.95
For Macintosh II	
OME 100i- 100 Megabytes	\$1199.95
OME 140i- 140 Megabytes	\$1599.95

ALL OPEN MAC DRIVES INCLUDE:

- ☐ 110/220V Power
- ☐ < 30 millisecond access time
- ☐ ONE YEAR WARRANTY
- ☐ FREE STACKWARE, & Microsoft® Excel Templates by Heizer Software.

MEMORY

YES! We've Got It!

For Macintosh Plus		For Macintosh Plus,SE,II	
RamPlus 2	\$349	Ram II+II	\$1099
Expands to 2 Megabytes RAM		4 Megabytes RAM, 120ns	
RamPlus 4	\$849	Ram II+IIs	\$1199
Expands to 4 Megabytes RAM			
NOTE: RamPlus may not be physically compatible with internal devices.			
For Macintosh Plus,SE			
Ram II	\$599	Ram IIs	\$649
Expands to 2.5 Megabytes RAM		Expands to 2.5 Megabytes RAM, Surface Mounted	

NOTE: Due to space considerations surface mount is recommended for the Macintosh SE.

VIDEO

HIGH RESOLUTION COMPOSITE VIDEO ADAPTERS

for Mac 512,Plus, & SE
Monitors & Projectors
also available

For Mac SE \$149.95

For Mac512/Plus \$99.95

Monitors/Projectors
Call for Quote

VISA/MC
AMEX
Discover
Accepted

NTSC Converter

Connects your Macintosh II to NTSC video.
Record your Macintosh Graphics to Video Tape
or Use for live Presentations. Compatible with
Apple & Spectrum Video Cards.
GenLocking Version Available April.

CALL

VideoEx-

\$99.95

Expand the Mac II to full color capability

Accelerator II™

Speed math processing on the
Mac II by up to 400%
• Call •

Government & Institutional PO's
accepted.
FAX: 415-686-4244

ALL OPEN MAC products:

- Are Manufactured by -
OPEN MAC Enterprises
- Are User Installable -
- Preserve Manufacturer's Warranty -
- Carry a minimum 1 Year Warranty -
- Are stocked for rapid shipment -
- Are listed at a Cash Discount Price -
- Credit Cards not charged until shipment -

OPEN MAC Enterprises

415/682-0440

2280 Bates Avenue, Suite J, Concord, CA 94520

1987 OPEN MAC Enterprises. VideoEx, Accelerator2, RomPlus, Ram II, Rom II+II, VA Plus, VA SE, OME 40i, 100i, 140i are trademarks of Open Mac Enterprises. Microsoft is a registered trademark of Microsoft Corporation. Macintosh is a trademark of Apple Computer Incorporated.

Circle 45 on reader service card

Letters

Memory and MultiFinder

In *Commentary* (January 1988) Jerry Borrell mentioned that when he's using MultiFinder, MacCalc frequently quits with an Out of Memory error message. MacCalc is able to use all available memory and may be loaded in any part of RAM by Switcher or MultiFinder. Had he called our technical support line, he would have discovered that a MultiFinder-compatible version of our product is available free to all registered users [see *Updates*, this issue].

Richard A. Ross
Bravo Technologies
Berkeley, California

Our intent was not to criticize MacCalc but to warn our readers of the memory problems they're likely to encounter running applications under MultiFinder.
—Ed.

Scrutinizing Scanners

Jim Morton's informative look at the gray-scale capabilities of scanners ("Shades of Gray," January 1988) contains several inaccuracies about our products. First, our MacImage 2.0 image-processing software runs on all our user-oriented scanners, not just the high-end models. Second, the Model 840 costs \$4800 (not \$8995) and is capable of 400-dots-per-inch resolution. We do offer an OEM-oriented scanner plus software, Model 840i, for \$8995, as well as a midrange 300-dpi scanner, Model 830, for \$2800. Also, we reduced the JetReader's price from \$1300 to \$800 last October.

Charles R. Joseph
Datacopy Corporation
Mountain View, California

Jim Morton completed the features table just after the 840 line of scanners was announced; a footnote indicated that some prices and specifications might change. Thanks for setting the record straight. —Ed.

A New Leaf

Your editorial and the accompanying article (*Commentary* and "What's Wrong with Mail Order?" December 1987) gave our company food for thought because we, too, were guilty of that core sin of mail-order houses—living on the float. As a result, "Don't process checks and credit cards un-

(continues)

NOW OVER
130,000
NODES
INSTALLED

NODE WARRIORS.



For many people, using their Local Area Network is like a journey across 500 miles of bad desert, with strange, unforeseen forces of destruction lurking behind every turn. Until now that is.

Because now there's TOPS, a revolutionary departure in LAN design. TOPS fully arms each node with local user control of information, and frees you from the grips of costly central file servers—and even more costly network administration personnel.

TOPS' unique design gives users completely transparent access to files anywhere from any operating system on any computer—anywhere in the network. And TOPS' modular design supports new operating systems as they become available. Users become believers, because TOPS is so easy to operate. All its commands are totally intuitive.

TOPS is also easy to install and support, and there's no downtime necessary when adding new users. You just plug them in. And because there's no central file server you avoid data crashes and bottlenecks. Your LAN will be stronger than ever, and faster too, because users communicate directly with each other.

Reinforcements!

TOPS Version 2.0 does everything the original does, then adds a few extras all its own. Like automatic publishing and mounting of folders and volumes. Access to locally attached PC printers by other networked PC users. Compatibility with Apple Filing Protocol, and FlashTalk™ speed (it's three times faster than AppleTalk in PC to PC communications). Translation of PC files to Mac format and vice versa. And a lot more.

And price? No need to worry, because it won't put you into deficit spending. TOPS is just \$189 per node for Macintoshes and PCs.

So call 800-445-TOPS (U.S. and Canada) for a free Node Warriors button and more information. It'll tip the balance of power in your direction.



TOPS

A Sun Microsystems Company
950 Marina Village Parkway, Alameda, CA 94501
415/769-8700

Registered trademark: TOPS, Sun Microsystems, Inc.
Trademarks: FlashTalk, Sun Microsystems, Inc.; AppleTalk, Macintosh, Apple Computer, Inc.

Circle 81 on reader service card



MacTilt® & MacTilt SE®

Professional Ergonomic Workstations for the Macintosh. See and feel the difference they make!

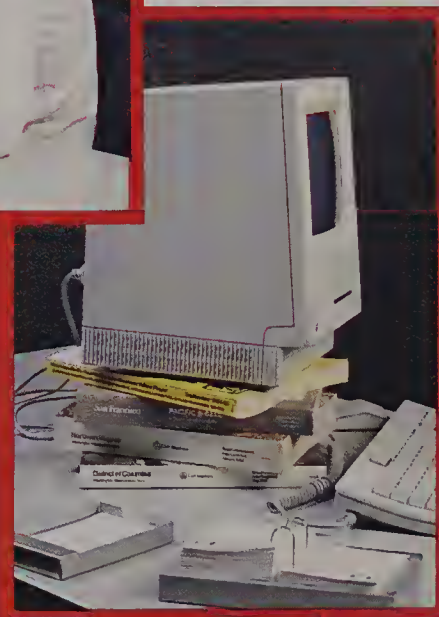


adjustability needed to reduce glare, and to ease eye, neck and back strain. Mounting clips assure stability yet allow instant portability.

MacTilt SE is designed especially for the Mac SE. The original MacTilt fits the 128K, 512K, and the Mac Plus. It comes standard with a universal drive bracket and is available in platinum or beige. Optional accessories include a security system, hard disk bracket, dust covers, etc. MacTilt and MacTilt SE are unit priced at \$89.95.

For the finest accessory available for your Mac, see your Apple dealer or contact:

ERGOTRON inc
1621 E. 79th Street • Mpls., MN 55420
612-854-9116 • 800-328-9839
TLX 4310015

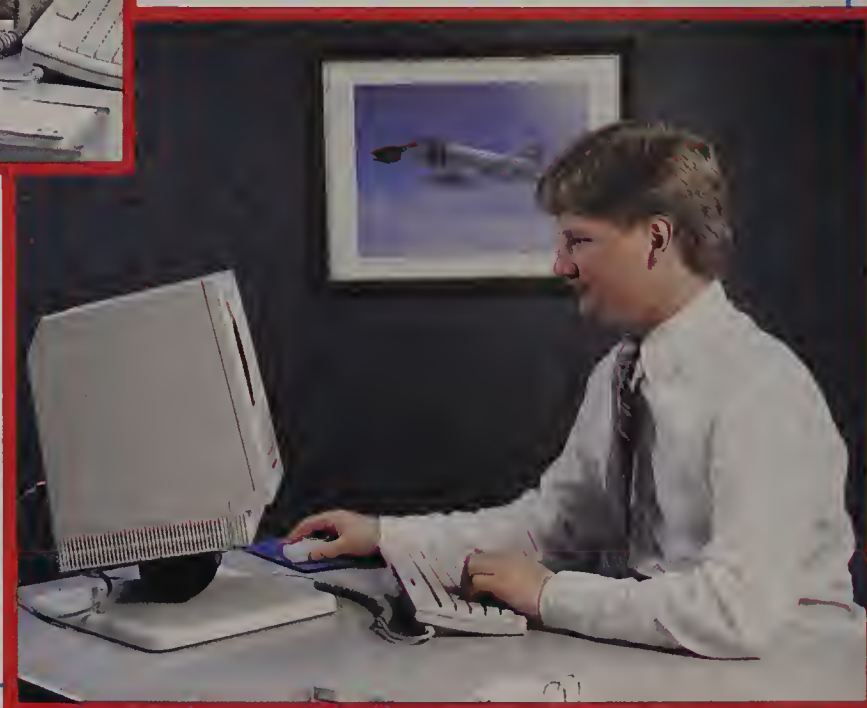


In business environments where operators spend long hours in front of their computer, the Mac's small screen size and the low physical profile can cause physical discomfort and reduced productivity. A common solution to the low profile problem was to place the computer on top of a hard drive. This is no longer a solution for the Mac SE with its internal hard disk or the Mac Plus when used with a vertical hard drive or a file server.

Phone books, shoe boxes, and other creative ideas have been tried to bring the Mac up to eye level, but with little success.

MACTILT IS THE SOLUTION!

By raising the Mac 4 inches, providing 30° tilt, and 360° rotation, MacTilt provides the increased height and the



Letters

til everything is shipped" is now our policy. We're customizing our order-processing software to accommodate this change, but in the meantime we're manually holding up processing to coincide with shipping dates. While we do not sell Macintosh products, we thought enough of your article to recommend it to our PC customers.

*Bill Babcock
Spite Software
Portland, Oregon*

We're glad to have influenced such a responsible policy decision. At least two other mail-order firms have recently taken this route: Icon Review and PC Network (under new management as The New PC Network). Both now wait until products have been shipped before billing customers. —Ed.

Accuracy Is the Key

Your review of QuicKeys 1.0 (*Reviews*, January 1988) claims that "different sets can be easily loaded from within an application." A call to CE Software confirmed that this feature was not available in version 1.0 but would be in 1.1. Rating prerelease software is a disservice to everyone, and it makes me doubt the veracity of your reviews of other products I have not already tested myself.

*Murray Schacher
Los Angeles, California*

Our policy is to not review prerelease software. Contrary to what you were told, QuicKeys author Donald Brown confirmed that version 1.0 does allow you to open different sets of keys from within an application (see page 118 of the manual). To load a different set of QuicKeys without leaving your application, select "Read keys from the disk" under the Specials menu. Version 1.1 simply moves this feature (now called "Open set") to the Edit menu and lets you save sets without having to use the Quick Access application. —Ed.

North of the Border, Part 2

In your response to a reader's request for sources of public domain software in Canada, you directed him to Apple Canada, which is in fact the Canadian branch of Apple Computer. Although it supposedly keeps track of user groups, I wouldn't count on it.

(continues)



Finally,
a lightning fast
45 megabyte
hard drive with
a difference...

A BETTER SCRAPBOOK & A SCALING AND CROPPING TOOL!

SmartScrap & The Clipper

SmartScrap: a replacement for your old scrapbook accessory. With SmartScrap you can:

1. Find pictures easily in any scrapbook with a unique pictorial table of contents.



2. See all of your scrapbook pictures with horizontal and vertical scrolling.

3. Select any rectangle of a scrapbook picture for copying.

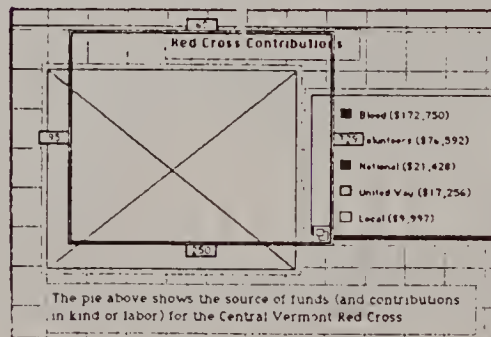
4. Open any scrapbook file on any disk without moving or renaming.

5. Create new scrapbook files with unique names (SmartScrap works with your old scrapbook files as well.)

SmartScrap & The Clipper

The Clipper: a cropping and scaling tool. With The Clipper you can:

1. Determine the exact dimensions of an area where you are going to paste a picture with The Clipper's amazing transparent window.



2. Trim and scale a picture to the exact dimensions you need before pasting.

3. See the contents of the clipboard even from applications which don't support Show Clipboard.

A Pair of Elegant Desk Accessories

Available from leading dealers or direct from:

Solutions International
P.O. Box 989, B4
Montpelier, Vermont 05602
802 229 9146

SmartScrap & The Clipper
\$69.95 plus \$4 shipping and handling

Visa, MC, check, COD or PO from D&B rated US Corporations.
Runs on 512K, Macintosh Plus or Mac XL. SmartScrap & The Clipper are trademarks of Solutions, Inc.

Circle 405 on reader service card

Letters

He'd be better off joining LOGIC: the Loyal Ontario Group Interested in Computers, which has well over 200 disks of Mac public domain software available to members. At \$35 a year, membership includes a bimonthly magazine and access to our bulletin board (416/922-1626). You can join online or by sending a check or Visa number to LOGIC, P.O. Box 696, Station B, Willowdale, Ontario, Canada M2K 2P9.

Geoff Gaberty
Toronto, Ontario

Another Canadian group we've recently uncovered is Club Mac, P.O. Box 34, Station A, Toronto, Ontario, Canada M5W 1A2 (416/598-2623); and a Mac dealer in British Columbia is setting up a referral center for Canadian user groups and public domain exchange. Contact Kevin Jampole at Netex Solutions Centers, 1010 Hornby St., Vancouver, B.C., Canada V6Z 1V6, 604/681-1234.—Ed.

Science and Graphics

Are there any scientific statistical packages for the Mac that also produce graphics? I need to plot a regression line with observed points on the graph as well as 3-D surface-response graphs.

Leslie Dale
Nacogdoches, Texas

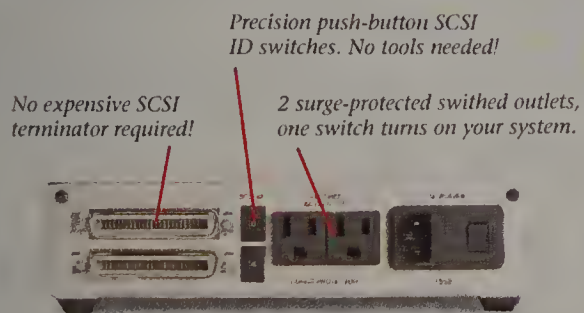
Systat, StatView 512+, and StatView II are the most widely used scientific packages, and they have all the scientific graphics anyone could want. You should also take a look at MacSpin, a special program that lets you rotate data sets in 3-D. Enabling Technologies (312/427-0386) may have released its statistics-with-graphics package by the time you read this.—Ed. □

Letters should be mailed to Letters, Macworld, 501 Second St., San Francisco, CA 94107, or sent electronically to CompuServe (70370,702), The Source (BCW440), or MCI Mail (addressed to Macworld). Include a return address. Due to the high volume of mail received, we regret we're unable to respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of Macworld.

It's removable.



Simply eject the DATA♦PAK™ cartridge and take a 45 megabyte Winchester hard drive home tonight! Trustworthy and reliable, with an average access time of only 25ms it's even faster than most fixed hard drives. Imagine sending or carrying 45Mb of CAD/CAE drawings, color graphics or presentations with the ease and safety of a diskette.



The revolutionary DATA♦PAK also delivers the features you would demand in a more traditional hard drive system; self diagnostics, automatic park and lock heads, password protection, and volume

partitioning are all standard. And with its unique 8Kb buffer it adapts itself to any Macintosh, while keeping its 1:1 interleave performance.



DATA♦PAK

Use DATA♦PAK's new transportable technology as your principle storage system and gain all the advantages of ultimate security (lock it in the file cabinet), easy organization of related projects, unlimited storage capacity and fast data back-up.



DATA♦PAKduet

Available in three configurations. DATA♦PAK is a single cartridge drive system; DATA♦PAKduet™ is a dual cartridge drive system; and DATA♦PAKhd™ is a single cartridge drive coupled with either a 40, 80 or 120Mb fixed hard drive. With DATA♦PAK you now have POWER2 EXPAND!® 45mb at a time.



DATA♦PAKhd

All the convenience of a floppy, all the performance of a hard drive. Buy a DATA♦PAK now at your favorite Apple dealer!

MASS ♦ MICRO
s y s t e m s

3250 Jay Street ♦ Santa Clara ♦ California ♦ 95054 ♦ 408-988-1200

DATA♦PAK, DATA♦PAKduet, DATA♦PAKhd, POWER2 EXPAND! and MASS♦MICRO Systems are trademarks of MASS♦MICRO Systems, Inc.
Circle 207 on reader service card

**Buy Now,
Receive 45Mb
FREE!**

800-253-8900

Write from

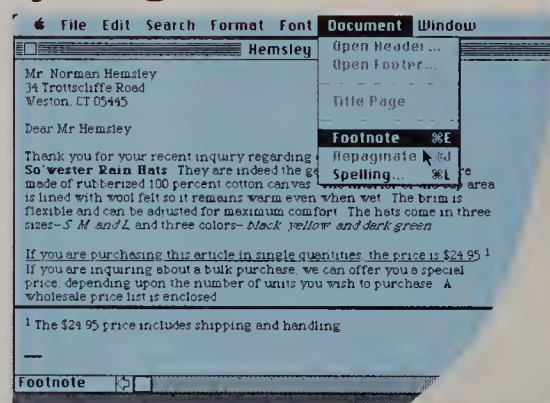
When it's time to start putting words on paper, Microsoft® Write is the right place to start. Because no comparably-priced word processor gives you as many features. Or an easier way to get at them.

If you already own a Macintosh,TM you already know how to use Microsoft Write. Because it shares all those great Macintosh qualities. Like comprehensive, pull-down menus. And familiar point-and-click operation.

But don't worry if you've never made friends with a mouse before. Microsoft's exclusive on-line context-sensitive Help puts the answers to most of your questions a mere button push away.



Microsoft Write's 80,000-word, customizable dictionary helps our built-in spelling corrector make all your words letter-perfect.



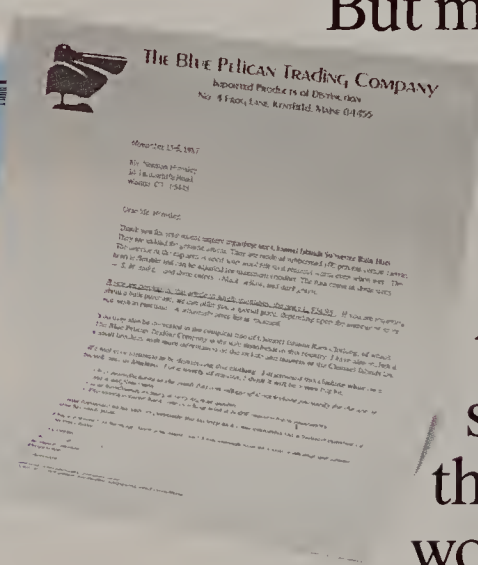
Teamwork at work. You supply the words, Microsoft Write supplies the footnote number and location.

Plus you get all the documentation and telephone support that's helped make Microsoft's family of products the most popular of all Macintosh applications.

But making it easy to get your words on paper is just the beginning.

For example, thanks to a built-in spelling corrector, those well-chosen words of yours will all be impeccably spelled. And, thanks to another innovative feature, properly placed as well.

Because the page preview command offers you the unique opportunity to examine your work a miniature page at a time. So you can review, and revise, all those little factors that make the difference between a good looking document and a great one.



Team Microsoft Write with a LaserWriterTM printer and your words

the start.

Like where pages break and margins fall. And how the headers and footers lay out.

What's more, with advanced features like automatic footnotes, newsletter-column formatting, and the ability to mix text and graphics on the same line, Microsoft Write adds authority, and clarity, to all types of writing. With about as much effort as it takes to dot an i.

But Microsoft Write doesn't stop there.

As your word processing needs grow, you can always take advantage of the powerful,

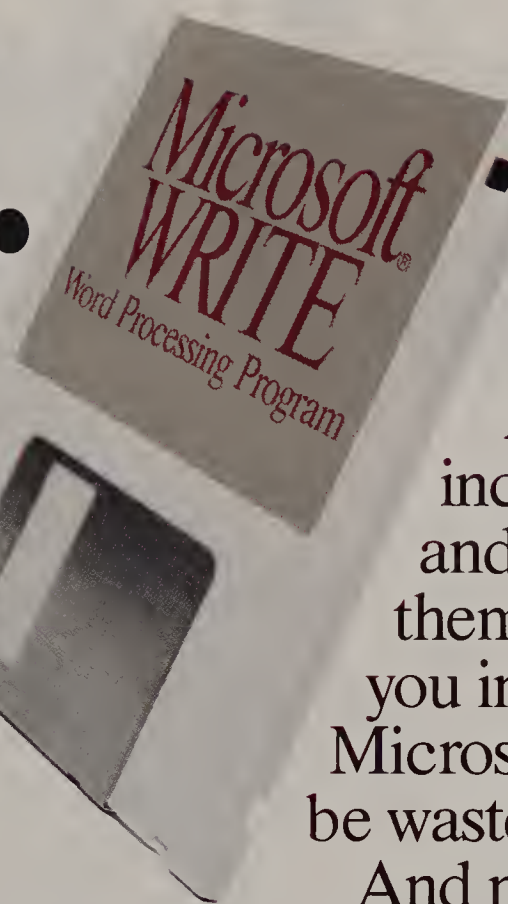
AAAAA
can stand as tall, or as small, as you'd like.

processor, Microsoft Word, Version 3.

Without going back to page one.

In addition to using your existing files, Word uses the same commands as Microsoft Write.

professional features of the Macintosh's leading word



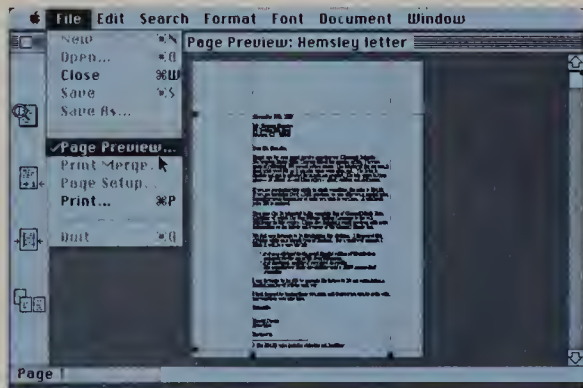
And then adds incredible features and flexibility to them. So the time you invest with Microsoft Write won't be wasted.

And neither will your money. All registered Microsoft Write owners can upgrade to Word at a special, reduced price.

Before it's time to face up to the infamous blank page, call (800) 541-1261, Dept. E48, for the name of a Microsoft Write dealer near you.

Trust him to give you everything you need to get your writing started.

Except, perhaps, an opening line.



With Microsoft Write's page preview command, what you see on the screen is what you'll see on your paper. Line after line after line.



Got a question? Microsoft Write's on-line, context-sensitive Help gives you the answer. Right on the spot.

Microsoft Write

"SIMPLY PUT, CIRRUS DRIVES ARE A JOY TO WORK WITH."

"These are powerful drives with powerful software."

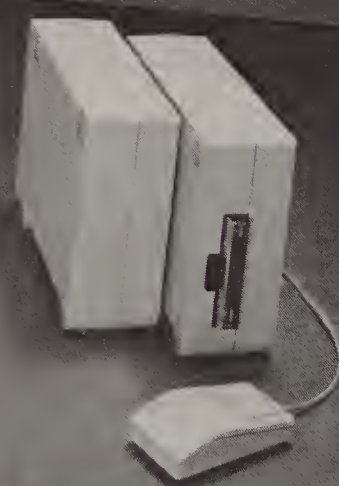
"Using Cirrus drives gave us an appreciation of the importance of ergonomic design to performance."

"Cirrus drives are quiet and easy to work with...a plus to their performance rating."

"Very small and lightweight, (Cirrus drives) are constructed of quality materials designed to last."

"The Cirrus drives have the most exciting, simple and elegant design we have seen in a hard drive for the Macintosh."

Michael Day
The Macintosh Journal



From

\$449.99

SLOT MACHINE 20, 30, 40, 60
20-60 Mbyte internal Mac SE
hard disks

CIRRUS 20, 30, 40, 60
20-60 Mbyte Mac external
hard disks

CIRRUS 40T
40 Mbyte tape backup

Systems include drive, cable,
software and manual.

Cirrus Drives

The Cirrus drives are exciting and excellent performers. They offer impressive speed, flexible software, attractive design and quiet operation.

Ease of Use

Running a Cirrus drive is very simple. It is just a matter of plugging the drive in and turning it on. The drives come pre-formatted and ready to go. The Cirrus has two DB 25 connectors on its case, so its cables are easier to work with than the "standard" SCSI cables that come with some drives. The design of the Cirrus drives contributes greatly to their ease of use.

The software that comes with the Cirrus drives is very flexible. It follows the Macintosh interface closely, and is well done. With the software, users can partition the drives into several volumes, or combine several drives into one single volume. Volume sizes can be changed or new ones added at any time without losing data. Password protection, manual or automatic mounting, automatic head parking, backup utilities, and disk repair utilities are all standard. In addition, the software performs several diagnostic tests including the ability to map out bad sectors and program the drive's interleave. In short, this is some of the most extensive and best written software available for Mac hard drives.

Most of the Cirrus' flexibility comes from their excellent software. However, the physical construction of the drives also contribute to their superior flexibility. Unlike other drives for the Mac, Cirrus drives can be placed vertically or stacked horizontally depending on your desktop requirements.

Performance

Cirrus drives were engineered to perform well in everyday situations. These drives are very fast when performing common operations such as going to the chooser or building the desktop. Reading and writing to and from files is also very fast. Using the Cirrus drives gave us an

appreciation of the importance of ergonomic design to performance. For instance, fan noise can increase fatigue in office workers. A drive that is built to be quiet and easy to work with may not increase the data transfer rate, but it will help to get more productivity out of the user. Cirrus drives are quiet and easy to work with which we consider to be a plus in their performance rating.

Because the Cirrus software is so good, users may want to use it to initialize drives from different manufacturers. In our tests, this worked well, and allowed drives of differing origin to be linked together as one volume. Since many of the older SCSI drives came with poor software, this is a good argument for buying a Cirrus drive and chaining it with other drives after they have been initialized with the Cirrus software.

Design and Construction

The Cirrus drives, though very small and lightweight, (about 4 lbs.), are constructed of quality materials designed to last. Their light weight is due to the small number of components in each drive and to their plastic case. The Cirrus drive is both sturdy and durable; the internal power supply is encased in aluminum, and the drives are shock mounted on rubber bearings.

The Cirrus drives have the most exciting, simple and elegant design we have seen in a hard drive for the Macintosh. The modular construction of the drives means that any repair work will be quick and easy. Simply put, Cirrus drives are a joy to work with.

Recommendations

Cirrus drives were designed for the professional user. They were not engineered to be low cost products, or to be "just adequate performers;" they are built with premium components. These are powerful drives with powerful software. Cirrus drives are an excellent solution for users who demand a lot. Readers should also note that several new products are in the pipeline and that a 40MB tape backup and 30MB hard drive are currently available. We give the Cirrus 20, 40 and 60 drives an excellent rating (8 on a scale of 10) and recommend that other drive manufacturers follow the Cirrus example, and design drives that are simple, elegant and impressive performers. -Michael Day

© B and P Publishing

Visa and MasterCard accepted.

CALL TO ORDER 1-503-684-0143

*Cirrus is a trademark of Cirrus Development Corporation. Macintosh is a trademark of Apple Computers. Prices and specifications subject to change without notice. Prices quoted are cash prices. Mouse not included. Excerpts reprinted with permission of Mac Journal.

LaCie, Ltd.

16285 S.W. 85th, No. 306
Tigard, Oregon 97223

Circle 145 on reader service card



Raising a Magazine

In which we ask, does the editor know best?

Magazines are like children. When you have bad ones, people you don't even know go out of their way to tell you about your problems. If you're lucky, you have good children, the kind that grow up and make a difference. But along the way you hear, "Oh, uh . . . nice kid." Nobody really notices all the labor and love that created the nice kid. Editors, unlike parents, have a readymade forum in which to speak, and every so often they make use of it to tell readers about their children—er, magazines. It's as inevitable as daffodils in the spring.

To begin, I should say that the dramatic growth of the Mac has us all working overtime. What a time we're having. *Macworld* now has over 250,000 circulation (that's 375,000 readers), with a goal of 275,000 by July. *Macworld* has become, over the past four years, a magazine of national stature, with responsibility commensurate with that stature. It's with a certain chagrin that I note another Mac magazine's motto: "the largest independent Macintosh magazine." That, to be candid, is horse pucky. *Macworld* has the largest circulation base of any Macintosh magazine. At least 30,000 more than our nearest competitor.

The friendly faces that you see in the nearby photo belong to our immediate family of full-time editors.

Having been the editor of 3 computer magazines and having written for 20 more over the past ten years has made me grateful to be at PCW Communications, the company that publishes *Macworld*. The most important reason? Unlike most editors in the computer press, I do not report to or take direction from a publisher. Rather, I work for the Editor-in-Chief of all PCW publications, David Bunnell. Now David may write an occasional editorial that has people calling him the Antichrist, but I be-



The largest staff of editors dedicated to covering the Macintosh.

lieve that he is driven by a deep interest in personal computers and a dedication to making his magazines the best in their fields.

When many people say *publisher*, they have a Norman Rockwell image in mind of a sagacious, sweated, pipe-smoking fellow. The old man that knows how magazines are made, how to market them, how to keep their readers. Salt of the earth. But these days most publishers are driven by the bottom line, not by ideas or idealism. Publishing is a business, not creative expression. The result is that many magazines serve advertisers first, and readers second.

One of the other Mac magazines, for example, has run two cover stories during the past 18 months extolling the virtues of products that essentially no longer exist today. But at the time of the stories, the devel-

opers had big advertising budgets. I know—I had to tell both of these companies that the critical reviews we ran of their products would stand, and that we would not be providing additional coverage. They dropped their advertising with *Macworld* and promptly ended up on the cover of another magazine, where presumably the editors had the proper take on their products.

Advertiser-driven cover stories happen a lot when an editor reports to a publisher. On the other hand, because I have a peer relationship with our publisher, we interact as such. Because of this relationship, *Macworld* ends up taking a hard stand on many things, most often with the support of our advertising staff. In the end, advertisers must recognize that any magazine that sways with the size of the advertising account is, in the long run, a disservice to both the reader and the industry.

(continues)

Re-ink ANY FABRIC RIBBON automatically for LESS THAN 5 CENTS with **MAC INKER™**

Over 100,000 sold



FREE BOTTLE OF INK,
RESERVOIR CAP
& INK METER

MAC INKER

IMAGEWRITER I AND II	\$42.00
EPSON	\$42.00
UNIVERSAL (INCL IMAGE LQ)	\$68.50
MULTICOLOR IMAGEWRITER	\$80.00
MULTICOLOR ADAPTER ONLY	\$40.00

Shipping \$3.00

■ Applications: Dark, lubricated ink extends print-head life. Re-ink in color too. 2 oz. bottle \$3.00; pint \$18.50. We have a full range of special inks, heat transfer inks, cartridges and Mac Inkers available.

■ Over 16,000 cart./spools supported.

■ Dedicated Mac Inkers available for extra large or special cartridges

RIBBONS

Imagewriter Cartridge	\$3.15 ea
4 Color Imagewriter Cartridge	\$10.00 ea

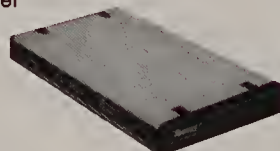
MODEMS

Mercury 1200AT	\$139.00
Mercury 2400	\$239.00
Capricorn World Minimodem *	\$169.00
Quick Link MAC software (w/ modem) ..	\$15.00
Cable	\$15.00

* Capricorn - 300/1200 baud, supports both US & European standards.

100% Hayes Compatible

Shipping \$5.00



- 24 month warranty ■ Status lights
- Speaker ■ Call progress monitoring

DATA SWITCHES



\$50.00

Cable \$15.00

Shipping \$5.00

8 or 9 pin models available

We have switches and buffers for any application, at the best prices in the nation. Ask for brochure.

Cables: We carry cables for Apple computers and peripherals. Rapid turnaround on custom orders. Competitively priced.

SPECIAL OFFER: For orders of \$100.00 or more. Tell us where you read this ad and get a free key-chain, beeper, and flashlight combined! A \$15.00 value!

30 day money back guarantee
on all products. 24 hour shipping.

ORDER TOLL-FREE IN OREGON
1-800-547-3303 (503) 626-2291

**Computer
Friends®**

14250 N.W. Science Park Drive
Portland, OR 97229,
Telex 4949559, Dealers Welcome.

Circle 69 on reader service card

Commentary/Jerry Borrell

What Are Our Objectives?

I could be long-winded, but quite simply our aims are objectivity, balance, timeliness, thoroughness, and in-depth coverage. What's that mean? That we are not beholden to any company or product when we decide what to write about. That we balance our coverage in each issue across subject areas, beginning with an emphasis on business applications and ranging through graphics, desktop publishing, communications, programming, utilities, and games. It means that we provide something for power users and something for beginners. We cover new products before other monthlies, and pride ourselves on having consistently done so.

So Show Me

Look at the basic organization of most magazines. They have news, features, departments, and—in computer publications—product reviews and product announcements. For example, take a couple of Mac magazines and sit down with them side by side. Leaf through them. Bear with me; it is enlightening, I guarantee. Let's start with reviews.

The bottom line: we print reviews of at least 20 products each month, more than any other magazine. More than twice as many as our nearest competitor. Not only more, but longer and in depth. Come on, I know some magazines say they run hundreds of reviews—so how many sets of Ginsu knives do you own? Read through a couple reviews. Notice that our reviews put a product into perspective? When we review something, we tell the reader about similar products and how they differ.

Notice that we don't slam-dunk a fast number rating on the top of a review. That's because we think it may mislead the prospective buyer; readers have different needs and different levels of knowledge and experience. Numeric ratings only tell you about how the product compares to some statistical ideal. Didja ever notice how few *bad* ratings are given by the people who hand out the grades? Like less than 2 or 3 percent, and none of them go to major advertisers. Coincidence? Icon or symbol ratings are the same, except they require less work and justification. Stop and think about, say, a five-symbol rating: basically you have a vague numeric equivalency. It gives the impression of having fairly evaluated a product—without the effort.

By the way, we don't print reviews of beta (prerelease) products. Our reviewers do start working with products in the beta stage, because it enables us to have more

experience with the products. We review only products that are shipping to customers.

And Furthermore

How about features? The big stories in the middle of the magazine. Compare articles on, say, disk drives. Note that our last overview of drives had over 200 products (we resisted touting how many on our cover—that's marketing hype, not substance), and no other magazine even had the specifications on 20 of the drives. It takes weeks to collate all that information. Compare a different kind of feature, one that tells how to upgrade your Mac; we've run two of those recently. One article tells what options you have, the other actually shows how to perform an upgrade (see "Installing Memory" in this issue). We run both types of articles. Other magazines ramble through desultory product descriptions; they don't compare specific features. They don't explain how accelerator cards actually differ in their architecture and how the various approaches make different cards appropriate for specific applications. The problem is that many marketing people, who tend to be influential, aren't readers. They look at table-of-contents pages and conclude that one magazine covers the same material as the other. Or they unquestioningly accept hearsay about what a magazine does.

(continues)



M.S., E.E., E.E., E.E.: The largest group of Mac editors trained in computer science and engineering. We earned our technical expertise.

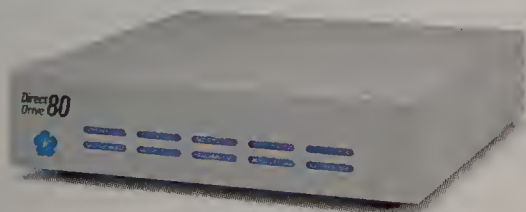
No other drive comes with this.



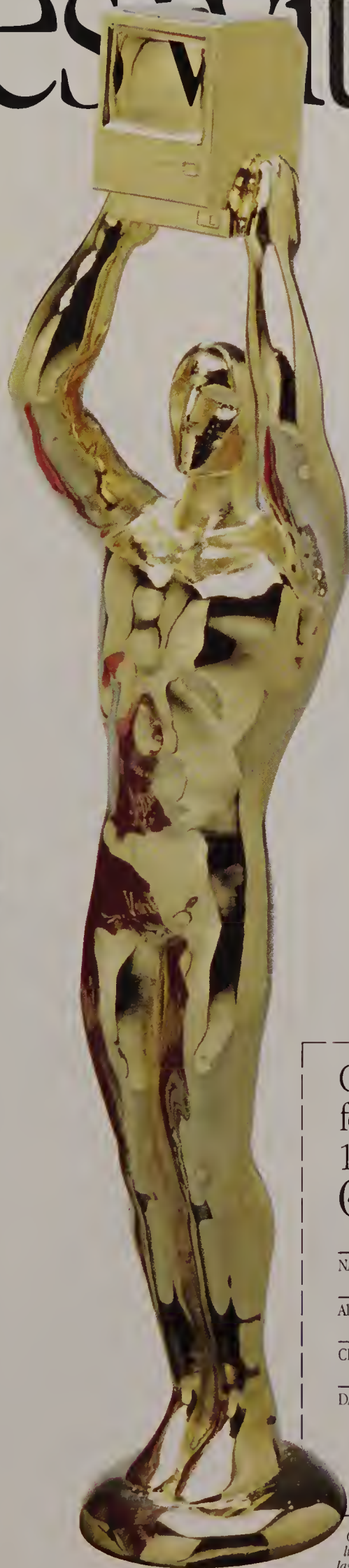
**“Best New
Hard Disk
of 1987”**

*MacUser Editors
Choice Awards*

The acclaimed Jasmine Direct Drive 80 is the standard by which all others are judged. Powered by the incredible Quantum 80 MB hard disk drive, it has become one of the most desired Macintosh peripherals ever made. And, like all Jasmine products, a long list of “extras” come along for the ride.



DirectDrive 80, \$1399.00
To order call (415) 621-4339



Jasmine's new Product Catalog features an extensive family of Hard Drives and the new 8 Bit, 24 Bit Renoir Video System for the Mac II.

Call or send now
for Jasmine's free
1988 Catalog
(415) 621-4339



NAME

ADDRESS

CITY

STATE

ZIP

DAY PHONE



Jasmine

555 De Haro Street, San Francisco, CA 94107

Circle 102 on reader service card

Our prices include a Full One Year Warranty. Every drive is shipped with a technical hot line number to answer any questions. Direct Drive 80 and Jasmine are trademarks of Jasmine Technologies, Inc. Prices include 2' cable and PD software. Prices do not include shipping, CA sales tax (6.5%) or special rush handling. Apple and Macintosh are registered trademarks of Apple Computer, Inc.



For two years we've run technical and applications benchmarks. You'll continue to see the most accurate results in Macworld. "Independent" means we don't sell our services to developers.

We don't fill our articles with anecdotes or truisms. We do the basic research on products, try them out, and tell readers the problems they're likely to find. We dig into tough issues, such as communications, and provide answers. When we do publish hands-on articles, the author is not merely

summarizing product documentation. We tell you what product is best for which applications.

We don't do features on single products—although that's a good way to get advertising. We don't run feature after feature on games. We cover areas other magazines haven't even written about—computer-aided design, engineering, color printers.

You Got Labs, We Got Labs

Check out this photo: is this a lab or what? It's real, here in our building. We don't need to put on white coats and hype what we do. We've earned our credentials in engineering and computer science; they didn't come from the typesetting department. And we don't tell our readers that we have independent labs in-house and then tell advertisers that they can buy our lab services. Conflict of interest. We simply test products for compatibility, and the results show up throughout the magazine. The first department from our labs will run in the fall. We're the only Mac magazine to run comprehensive benchmarks on products, something we've done for nearly two years. I'm glad that others have recognized the necessity of benchmarks, but—please

—they should earn some credibility before marketing their new-found authority.

We do, by the way, offer results from an independent testing lab. National Software Testing Laboratories in Pennsylvania provides us with exhaustive applications test results. Look for our new department in August that will publish the NSTL's research on Mac applications. The truth is, no magazine publisher can afford to provide industrywide benchmarks. But ink is cheap, and some people use it that way.

What's in the Front and Back?

Departments. In the front we run columns, opinion pieces, editorials, and interviews. In the back of the magazine we have departments; we call them *How Tos*. They serve both beginning users—people who've just acquired a Mac—and those long-time users who need help getting started in a new field or tips for efficient use of their Mac tools. New users are driven to distraction by what they consider to be an assumed level of knowledge about the Macintosh. So we provide introductory

(continues)

Introducing...

Our 1988 line of quality MacLuggage™ ©

Designed for the growing family of Macintosh™ computers and peripherals.

"The first carrying case released by I/O Design for the new Macintosh SE is a sure winner. Available in platinum with a jet-black trim or in deep navy blue, this elegantly styled bag is crafted with excellent workmanship from high quality materials. To protect the SEs that have the new internal hard drives, the padding is more than twice as thick as on normal carrying bags, and is tall enough to accommodate the new Apple extended keyboard without crowding. No other bag currently on the market offers both these features. The Macinware SE Carrying Case is an attractive piece of luggage of which I/O Design can be justly proud. I recommend it highly."

C.J. Weigand
MACazine Oct. 1987

* All MacLuggage is made in the U.S.A. and is crafted with the same high quality materials and workmanship as the Macintosh SE™ Carrying Case.



Call 1-800-241-2122

FAX: 215-524-7946

I/O Design, Inc.

P.O. Box 156 • Exton, PA 19341

215-524-7277

All Trademarks Acknowledged

Circle 246 on reader service card

SEE FOR YOURSELF



Tektronix®
COMMITTED TO EXCELLENCE

327-A-3017-0840-R-MWD-5

The only way to truly appreciate the impeccable quality of Tektronix printer output is to examine it firsthand. That's why we're glad to provide you with a free packet of hardcopy samples showing how your own applications output will improve.

Just complete and mail this card. Then see why Tektronix is the price/performance leader in color printers.

- ☐ Send hardcopy samples to my attention.
- ☐ Have a sales representative contact me immediately.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone (____) _____



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1 BEAVERTON, OR

POSTAGE WILL BE PAID BY ADDRESSEE

TEKTRONIX, INC.
Information Display Group
P.O. Box 15273
Portland, Oregon 97215



HOW TO LET YOUR MAC II SHOW ITS TRUE COLORS.

Introducing the Tektronix 4693D-MAC II color printer interface kit. It's the only color printing solution that enables you to match the MAC II's superb color capabilities with Tek's ultra-fast, 300 dots-per-inch 4693D color printer.

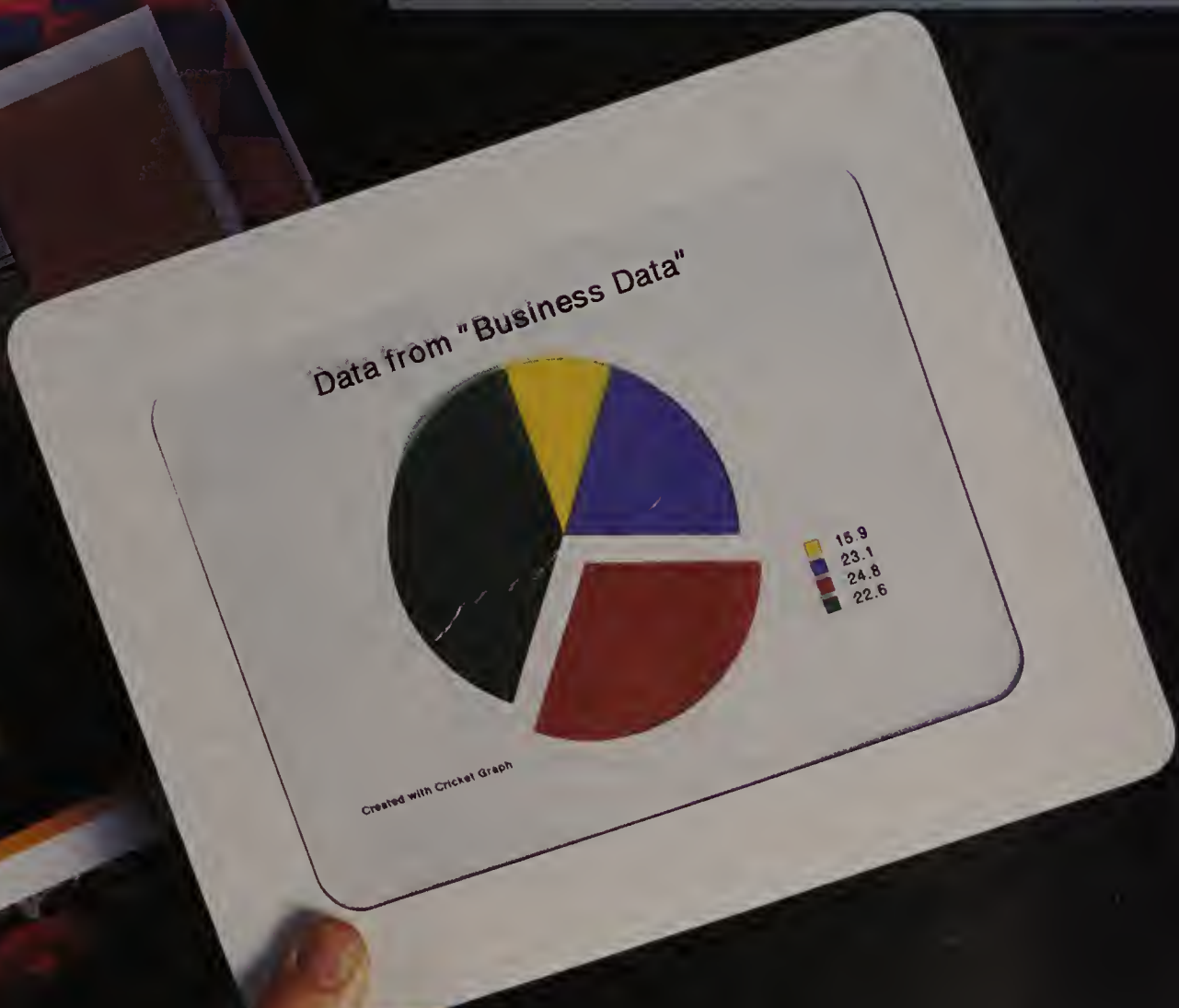
With its 68020-based color image processor, the 4693D can deliver the MAC II's 16.7 million color palette to paper or transparency. Its high-speed parallel interface can offload your MAC II in a few

seconds. And its optional 12 Mb onboard memory lets you store, queue, and print without tying up your MAC II.

The 4693D-MAC II interface kit includes a high-speed parallel interface card, printer driver software, and selected high-resolution bit-map fonts, for text that's laser sharp *and* in color.

Backing the 4693D and the interface kit is Tek's 67-country service and support network. For more information about Tek's complete

4690 color printer family and OEM/VAR dealer programs, contact your local Tektronix representative. Or call 1-800-225-5434. In Oregon, call 1-235-7202.



© 1988, Tektronix, Inc. All rights reserved.
 ART-109.
 MAC II is a trademark of Apple Computer, Inc. The
 images courtesy of Modern Artist from Computer
 Inc.; Dimensions from Visual Information, Inc.; Cric
 Graph from Cricket Software, Inc.; and PixelPaint fro
 SuperMac Software, Inc. Screen image courtesy of V
 Information, Inc.

Tektronix
 COMMITTED TO EXCELLENCE

Circle 105 on reader service card

*Performance
Without Compromise.*



Apple 13" Color Monitor
640 X 480 Resolution ■ ■ ■



SuperMac Trinitron 16" Color Monitor
1024 X 768 Resolution ■ ■



SuperMac Trinitron 19" Color Monitor
1024 X 768 Resolution ■ ■

All you need to know

First, know that SuperMac products make it simple for you to put together *highest performance* video for your Macintosh® II. Here's all you do.

1. Choose your monitor.

Just as you choose speakers with your ears, you choose your monitor with your eyes. You'll know your monitor when you see it.

So you'll want to look at Apple's color and monochrome monitors, which may well be all the monitor you'll ever need.

But, in case they're not, we offer a few giant alternatives.

Two of them incorporate the renowned Trinitron technology for richest colors, blackest blacks, and the flattest, least distorted image area available.

Just pick between the 19" workstation size, or the 16" executive size—which ever best suits your needs.

Our other two monitors incorporate Ikegami display technology—highly regarded by leading video professionals worldwide.

You'll appreciate the outstanding price-performance of the *SuperMac Standard 19" Monitor*.

Or, if you need a big, photoquality display but don't need color, you'll be very impressed with the *SuperMac 19" Gray Scale Monitor*.

2. Choose a video card.

If the Apple 13" display is your choice, our *SuperMac ColorCard* has significant advantages over the Apple card. For starters, you get 8-bit video for up to 256 colors or gray shades, standard. For greatest reliability, the video RAM comes soldered to the board,

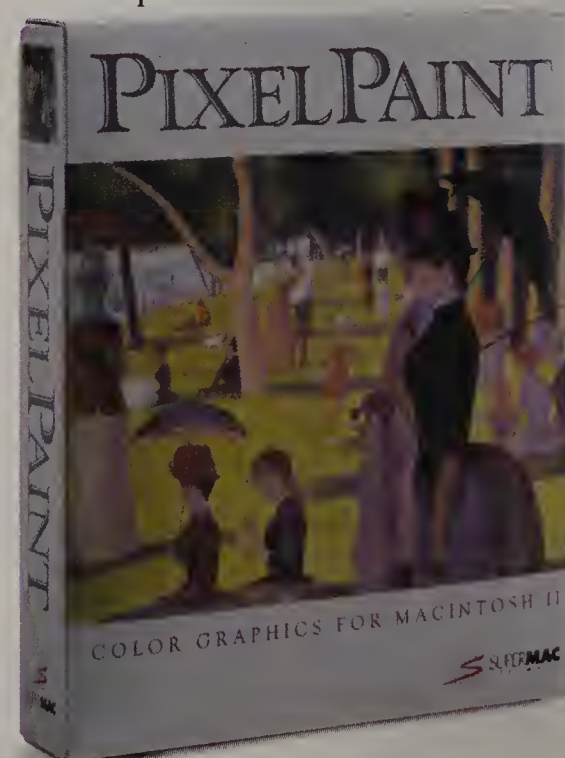
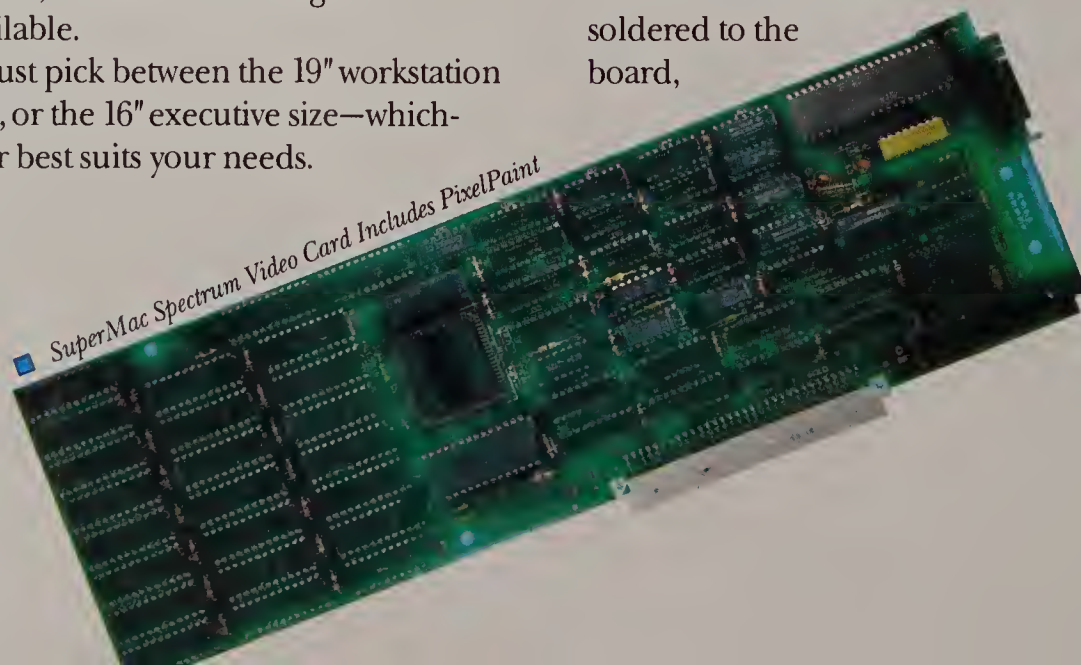
not slipped in as an upgrade.

And for a limited time, you get PixelPaint for free.

If you *ever* want a bigger display you'll want a *Spectrum card*.

The *SuperMac Spectrum* will drive *all* the monitors shown, at their full resolution. You get 8 bits of resolution standard, for 2, 4, 16, or 256 colors or gray scales simultaneously, chosen from a palette of over 16 million.

■ SuperMac Spectrum Video Card Includes PixelPaint



Trademarks: SuperMac; SuperMac, SuperMac ColorCard, Spectrum Video Card, PixelPaint, Letraset, ImageStudio, Visual Systems, Inc.; Dimensions. Registered trademarks: Apple, Macintosh.



SuperMac Standard 19" Color Monitor
1024 X 768 Resolution ■ ■



SuperMac 19" Gray Scale Monitor
1024 X 768 Resolution ■ ■

about Mac II video:

And you get PixelPaint, free.

Our *Spectrum/24*, with 24 bits per pixel, provides the most realistic richest color display available. You see the results in the image shown on the *SuperMac Trinitron 19" Color Monitor* above. You can literally display as many colors as there are pixels on the screen, so that images have a photo-realism that 256 colors just can't achieve.

Naturally, the *Spectrum/24* is compatible with all standard Mac II software, driving any of the monitors shown above. And it includes PixelPaint.

3. Get PixelPaint. (It's free with SuperMac video cards.)

PixelPaint is the acclaimed color and gray scale paint package that delivers minicomputer paint features and performance, with the ease of use and simplicity of the Macintosh interface.

Whether you're the most sophisticated graphic artist or don't know art at all, PixelPaint and the magnificent Mac II will change your mind about how you work and play.

You'd spend thousands to get this capability on high end systems. At \$495 on the Mac II, PixelPaint is a superb value, and a best seller.

PixelPaint is included, free of charge, with our video cards. That's value.

Always: Choose a vendor with great support.

SuperMac video products just plug in and run. The cards actually use digitized voice instructions to talk you through the installation.

All SuperMac video hardware products are protected with a one year warranty.

And, should the need arise, our expert support people will answer your questions over our tech support hotline. Or use our handy 24-hour BBS.



■ SuperMac ColorCard Includes PixelPaint Through April 30, 1988

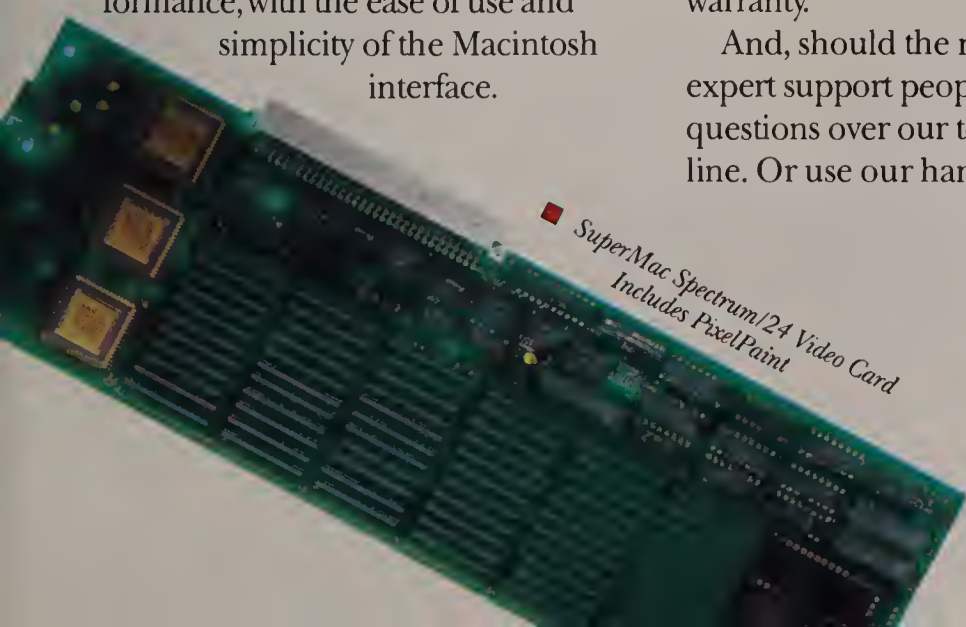
Now: Visit an authorized SuperMac dealer.

See how easy it is to put together absolutely outstanding Mac II video.

SuperMac Technology
295 N. Bernardo
Mountain View, CA 94043
(415) 964-8884 Dept. 16
(800) 861-5672 in Canada

SUPERMAC
TECHNOLOGY
A division of Scientific Micro Systems

Map: Barbara Smyth, using PixelPaint. Tennis Player: Keith Ohls, using PixelPaint. Floating Balls: Jim Battson, 24 bit ray tracing. Lamborghini: Markus Houy, using Dimensions™ The Victorians: Image Studio™



■ SuperMac Spectrum/24 Video Card Includes PixelPaint

Poole / Heid

**We know
you've been
trying
to make
ends meet,**



**but
wouldn't it
be easier
with your
eyes open?**



MacMoney™
A real eye opener.

For further information contact your
dealer or phone (213) 410-9527.
Survivor Software Ltd.

11222 La Cienega Blvd., Suite 450, Inglewood, CA
90304. Phone: (213) 410-9527. \$119.95 plus \$3.00
shipping and handling. California residents must add
6.5% sales tax. Hardware: Macintosh 512K, Plus, XL, SE or
II. Printer (recommended): ImageWriter, ImageWriter II,
LaserWriter, LaserWriter Plus (or equivalents). 800K Disk
drive recommended. MacMoney is a trademark of Sur-
vivor Software Ltd. Macintosh is a trademark licensed
to Apple Computer, Inc.

Circle 112 on reader service card



*Ten of the best computer
writers in the world.
Over 20 book-publica-
tion credits among
them. Writers who have
been with the Mac since
its inception—they've
helped shape the Mac-
intosh environment.*

*Goodman
Levy*

Getting Started articles here on applica-
tion areas (say, word processing), answer
questions, and tell users how to get the
most from their products.

How Do You Do All That?

It's not easy. Having 21 full-time
editors helps. That's the largest staff of any
magazine covering the Macintosh. About
three times the size of our nearest
competitor.

One of our secrets is the folks in the
smaller group photo, our contributing edi-
tors. You probably recognize some of them;
as a group they've published over 20 books
on the Mac and other computers. Many
have been writing about the Mac since it
was announced. Lon Poole, Danny Good-
man, Jim Heid, Robert Eckhardt, Charles
Seiter, Rob Hahn, Erfert Nielson, Franklin
Tessler, Bruce Webster, Steven Levy—the
best columnists and computer writers in
the country, not chosen because of where
they work, or suddenly recognizable be-
cause they're in our pages. They've earned
their recognition the hard way—they
worked for it. Together they represent the
most concentrated pool of Mac experience
in any magazine, with expertise in Hyper-
Card, business, graphics, utilities, you
name it. They don't just cover the Macin-
tosh market, they've helped shape it. You
won't find them writing for any other Mac
magazine; they serve you, our readers.

New News

As the Mac has grown we've had to
shift our focus somewhat. Especially in our
news sections. With all the venues for news
in the Mac market, we know that our cover-
age has to make a difference. Again, we go

a little bit further. We don't just republish a
press release on a new product; we tell you
what it competes with, how it differs from
other products, and what, if anything, new
it brings to market. To do this we recruited
an investigative reporter, Gil Davis, with
ten years experience in newspapers. Gil
also draws upon our contributors for input.

What Have You Done for Me Lately?

What a lot of computer magazines for-
get is that our readers are also consumers.
So we—and only we—write about con-
sumer issues such as mail order, upgrading
your Mac, how to work with user groups,
maintenance, and more. We write for you,
not for advertisers who like to see cover-
age of their products. We advocate. We
don't just receive your mail, we act on it.
If that means raising issues with Apple or
developers, all the better.

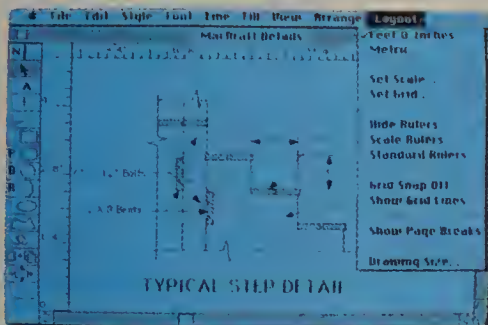
And there are other things. Like pro-
fessional copy editing, which spares you
typos and convoluted writing. We index
our magazine. We're the only magazine to
do that, every year for the past five years.
New subscribers can have our index in Hy-
perCard. We sponsor industry trade shows,
the Macworld Expos. We sponsor industry
events, such as the Technology and Issues
conference, in which our editors learn
about the real issues in Macintosh
development.

So forgive me. Every time I start on
the kid, I just can't stop. But one day I hope
you'll all recognize that what we've done
has made a difference. □

A GREAT PLACE TO START

When it comes to design, you need tools that don't get in your way. Whether you're doing graphics for desktop publishing or architectural design, you want CAD software to emulate your mind.

Welcome to MacDraft®. The



Technical Specs and Details.

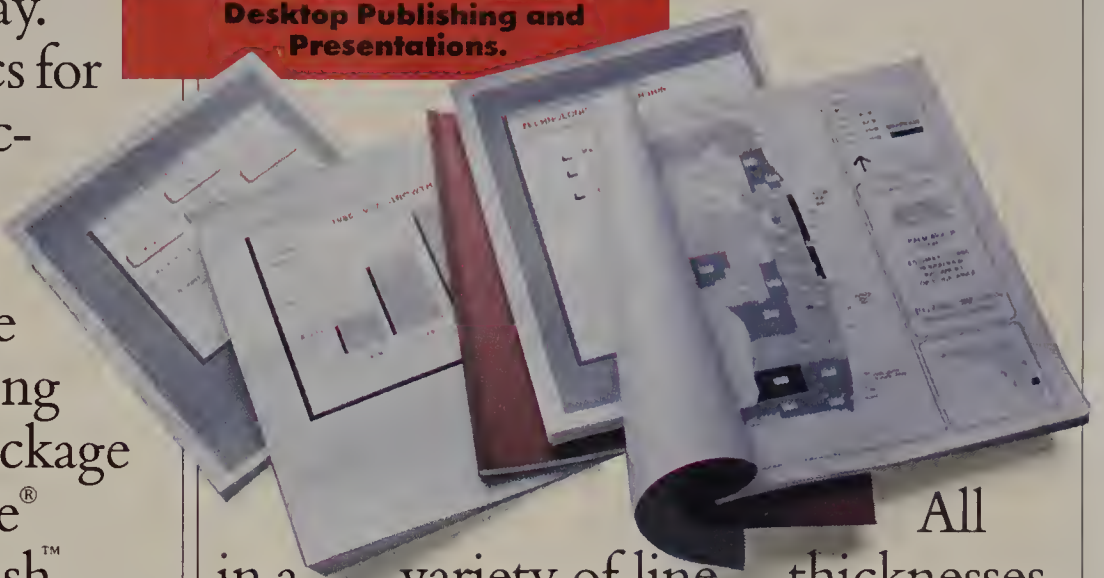
best selling CAD package on Apple® Macintosh™ systems. With

over 50,000 owners, it's

the program of choice for a wide range of professionals. The reason is simple. As in easy to use.

free-form shapes and more.

Desktop Publishing and Presentations.



All in a variety of line thicknesses.

Zoom in to do detail work or zoom out to see entire drawings. Add dimension lines to show lengths of lines or sizes of objects. Automatically calculate the area of any object. And resize

Architectural and Engineering work.

entire groups. All



In a matter of hours, you can be up and running. And productive. Creating designs you never thought you could do. With a program that costs so little.

MacDraft also has power. To begin with, you set the size and scale of the drawing.

Then click on icons to draw circles, rectangles, arcs, polygons, ellipses,

at the push of a button. After July, all MacDraft registered owners can buy DREAMS™, our more powerful CAD software, for \$200 as a special offer. It's our way of saying thanks. See your local dealer and get MacDraft. It's time to get started.



Buy now. Save later.

MACDRAFT



Innovative Data Design, Inc.

2280 Bates Avenue, Concord, California 94520 Tel 415 680 6818

MacDraft is a registered trademark and DREAMS is a trademark of IDD, Inc. Apple is a registered trademark and Macintosh is a trademark of Apple Computer, Inc. MacDraft must be purchased by July 30, 1988 to take advantage of the special offer. Sample drawings provided by Robert White, AIA, Fernandina Beach, Florida.

Circle 151 on reader service card

The Macintosh environment continues to expand.

New products are exploding into the Macintosh® marketplace at an astronomical rate. Such that tracking this exponential growth has become a full-time job. Fortunately for you, it is *our* full-time job.

As one of Apple's Value Added Resellers, we sell Macintosh and related products to professionals in business, government, and education.

We thoroughly research and evaluate everything we sell, and sell or lease only what we know and trust. We'll design an entire system for you, and if needed, integrate it with, or upgrade your existing equipment.

We'd like you to have our unique *HyperSolutions™* catalog, which will allow you to compare all the latest Macintosh products, and to communicate with our office. To get one, give us a call, or write us on your company letterhead.

And before you embark on a trek into the Macintosh universe, call us. Because, as you know, the universe is getting bigger all the time.



Sixty Eight Thousand, Inc.

Supporting Macintosh

26346 Carmel Rancho Lane, Carmel, CA 93923 408-626-1711 Fax 408-626-1780

Circle 154 on reader service card



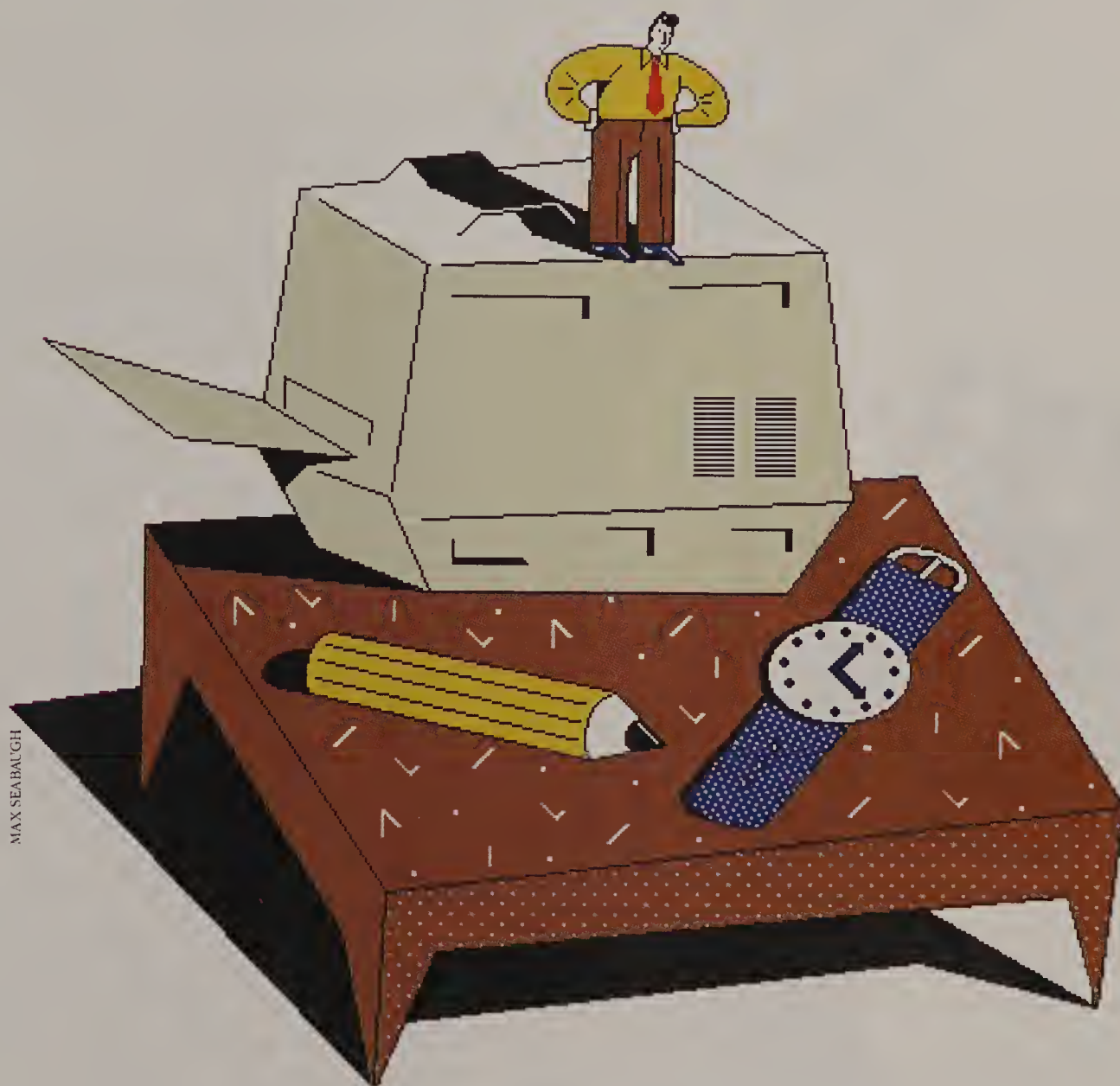
A Laser Printer of One's Own

*Is a personal laser printer worth it
—at any price?*

Yes, I have a laser printer on my desk. Even as I write these words, I can glance to my right and see it. It is big and beige. Not nearly as big as laser printers used to be, but that's part of the point. Laser printers are not what they used to be. Once, outfitting one's personal workstation with a laser printer was out of the question. Now the question is, Should I get a laser printer? And the answer is yes.

In my more contemplative moments I ask myself if I really *need* a laser printer. That query is good for 20 minutes or so of intense rumination. Certainly my life before the laser printer was not without its pleasures. Certainly I was able to produce hard copy of my work suitable enough in appearance to avoid embarrassment. Certainly I was able to find time to wait for the ImageWriter to screech out its missives, line by tedious line, tractor-feeding the output into the box I had placed on the floor. I did not think of those as dark days. I did not pace the room saying, "Oh, if I only had a laser printer things would be different."

Yet now that I have a laser printer I find that things *are* different. My copy looks perfect, carefully crafted, almost burnished. As pages escape the laser printer surreptitiously, like a rodent slipping under a closed door, I pick them up and am astonished. What editor would dare correct this obviously perfect work? The pages not only look cleaner than the *New York Times* (whose typeface they seem to share), but ink does not come off on your fingers, as it



does with the *Times*. The charts I construct look as slick as the ones in *USA Today*. (Probably because that newspaper, like most in America, uses Macintoshes and laser printers.) When I print out correspondence on letterhead stationery, I envision recipients smitten with awe and respect.

Not only does the laser printer let me print those things I did before, only faster and more clearly, but it encourages me to do things I would not try otherwise. While

it has been repeated ad nauseam that the power of the press belongs to the person who owns it, a lesser-known corollary says that the person who owns a press can't stand to have it just sit there doing nothing. Ideas for newsletters and other experiments in typographical design spring to mind. In no time, the owner of a laser printer, even one who simply wants to turn out text and spreadsheets and bar charts, finds him- or herself boning up on the basics of, say, kerning, sternly gauging software on its ability to perform that black art.

(continues)

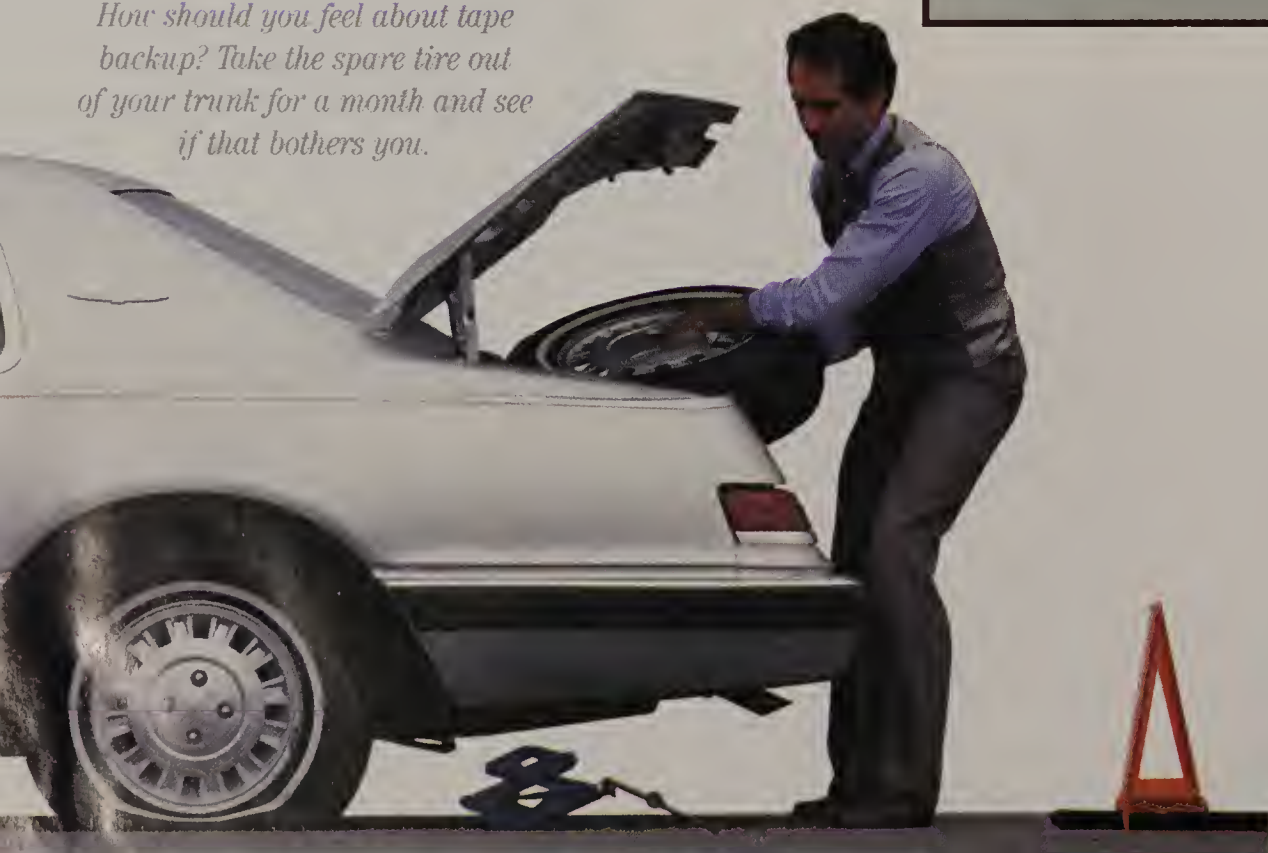
Steven Levy is a Macworld columnist and the author of Hackers: Heroes of the Computer Revolution (Dell, 1985).

Tallgrass, The First Name In Tape Makes Backup Second Nature.



Even people who jump out of airplanes believe in backup. They don't just carry a chute. They carry parachutes!

How should you feel about tape backup? Take the spare tire out of your trunk for a month and see if that bothers you.



INTRODUCING THE

TG-4040! Designed specifically to meet the expansion needs of the complete Apple Macintosh™ family, by combining 40 Mbytes of tape backup and 40 Mbytes of optional hard disk in a completely integrated solution.

With backup that's every bit as sophisticated as you expect from Tallgrass, a leader in the mass storage marketplace for over 6 years.

Tallgrass has made backing up your Macintosh more practical than ever. And so simple, backing up data becomes second nature.

APPLE ENDORSED IT. TALLGRASS MADE IT BETTER!

Apple endorsed the industry standard QIC 100 tape backup format which, by the way, Tallgrass invented. Now Tallgrass has made it even better.

TWICE AS FAST.

Our tape drive works double-time, backing you up twice as fast as our closest competitors. Including Apple. But the Tallgrass 4040 will slow down, if need be, to read an Apple tape. And we'll guarantee that compatibility.

WITH OR WITHOUT DISK.

Our high performance disk won't slow you down either. Plus, only Tallgrass offers you the ability to add the hard disk at a later date. With or without disk, it's the only solution flexible enough to grow as your business grows.

A TRUE 40 MB OF TAPE BACKUP.

Most competitors won't allow you to back up the full capacity of your 40 Mbyte disk. Tallgrass corrects this problem by providing a formatted tape capacity of over 42 Mbytes. A unique tape overflow feature allows you to back up disks of even larger capacities.

WHEN YOU CARE ABOUT YOUR DATA, BACK IT UP.

When the lights come back on, your data may not. That's why Tallgrass took the industry's most reliable medium—magnetic tape—and perfected a format that's becoming an Apple standard.



Breakthrough: We store 40 Mbytes of backup on this tiny tape cartridge, with legendary Tallgrass simplicity and reliability.



You think they filmed 22 years of Lassie with just one dog? Never. There were always at least two backup Lassies in the wings.

The TG-4040 is available in Apple platinum or beige.



This Apple "sider" fits neatly beside your Apple for easy tape access. An ideal companion for your Mac Plus, Mac SE and Mac II.



TALLGRASS TECHNOLOGIES

When It's Worth Saving.

11100 W. 82nd, Overland Park, KS 66214

CALL 1-800-228-3475

For information or the dealer nearest you.

THE SIMPLER, THE BETTER.

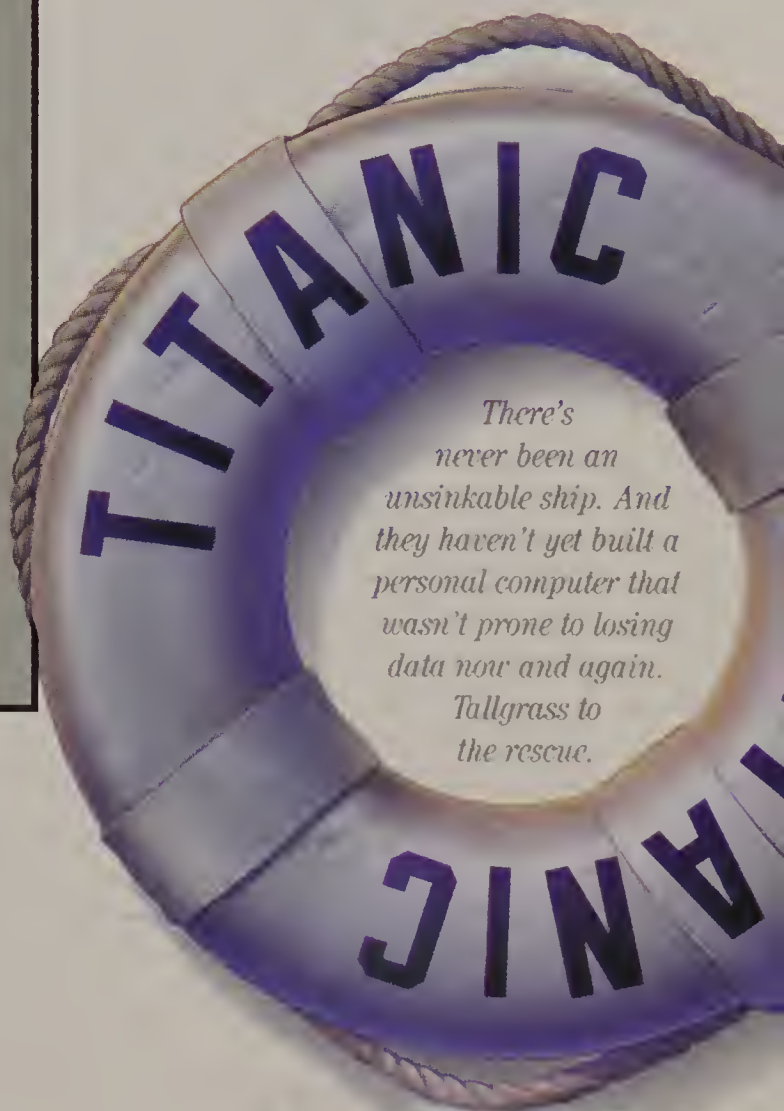
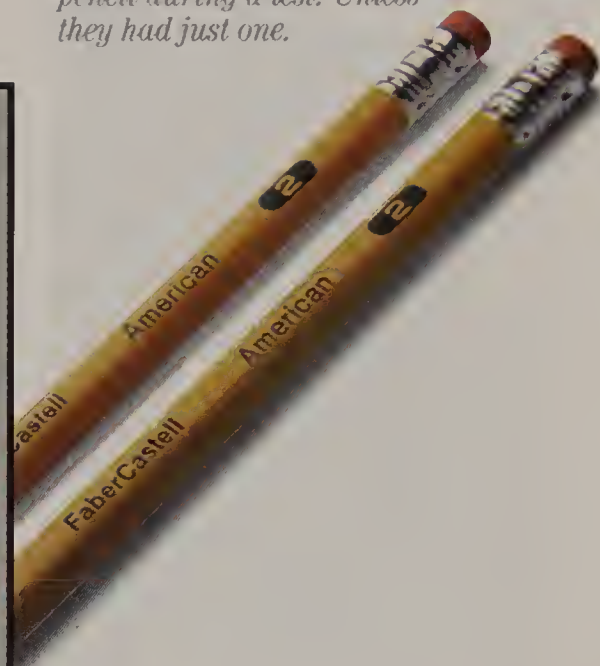
Tallgrass provides the solution with software that's smart enough to keep things simple. Yet with the features all systems should have, but don't.

- User-friendly icon-interface software.
- Mirror image, file-by-file and volume backup modes.
- Automatic, unattended backup operations. Set it once and forget it.
- Incremental or modified file option backs up only files that have been changed since the previous backup.
- SCSI interface for compatibility with all internal and external hard disks for the Macintosh.
- Apple Tape Backup 40 SC™, Apple Share™ and A/UX™ compatible.

TALLGRASS BACKS YOU UP WITH SERVICE AND SUPPORT.

Tallgrass has been backing its products since 1981, a statement that very few of our competitors can make. Our reputation for service and support is second to none. And you can be sure we'll be here to back you up as you move forward.

Nobody ever broke their No. 2 pencil during a test. Unless they had just one.



There's never been an unsinkable ship. And they haven't yet built a personal computer that wasn't prone to losing data now and again. Tallgrass to the rescue.

HIDE-A-KEY

HIDE-A-KEY



If you want to reduce the chances that you'll ever get locked out, just go to the trouble of slashing a backup key.

Circle 6 on reader service card

Macintosh, Apple Tape Backup 40 SC, Apple Share and A/UX are trademarks of Apple Computer, Inc.



Enthusiastic players everywhere have made MacGolf the best selling Macintosh game ever.

MacGolf puts you in the picture, a full perspective 3-D simulation of realistic golf action. You match your skills against fairways, roughs, bunkers, water hazards, sand traps and trees.

MacGolf gives you a player's eye view of the course, in any direction, and an aerial overview of each hole. You have complete control of your position, ball placement, ball speed and direction, and selection of all 14 clubs. Digitized graphics and sounds add to the excitement.

MacGolf is so close to the real thing it will improve your golf game. And by the time you've reached the eighteenth hole you'll know you've been in a real contest.



©1987, PCAI 612/427-4789

Circle 211 on reader service card

I can go on about how wonderful laser printers are until you scream for mercy. I can explain what they can do for you, the single-computer and single-printer user. But I would not really be telling you anything you don't know. *Everybody* with a Macintosh, a graphics-based machine that was made for a laser printer, knows by now that without a laser printer you are an unfulfilled, lower-than-the-lowest, bent-up, unredeemed soda can on the grubbiest, most vermin-ridden street in an undeveloped nation. There is only one reason that all of you don't have a laser printer already. It is the same reason that I don't officially own one, instead invoking justifiable yet whiny journalistic privilege so I can borrow them from manufacturers.

Money.

You Can't Always Get What You Want

Until recently, it has not been cost-effective for the masses to buy laser printers for our Macintoshes. (Unless of course we had a specific professional application; in that case the five thousand ducats or so required for a LaserWriter would be earned back in no time.) But last year saw the introduction of what is called a QuickDraw printer, distinguished from its predecessor by what it lacked. Not only does the QuickDraw machine not have PostScript, the page-description language that is at the heart of the original Apple printer, but even more important, it does not have the memory and processor power of the PostScript machines. Instead of being a powerful computer in its own right, the QuickDraw printer leeches off the power of your Macintosh. The drawbacks of this scheme will soon be apparent; the benefits are obvious: this printer can be made much more cheaply.

So cheaply that it is now a valid option for a Mac owner who has no specific professional need for a laser printer. At the moment I write this, the laser printer on my desk, a General Computer Company Personal LaserPrinter, retails for \$2000 and is being sold in a store near me for \$1600. (For about a thousand bucks more, you can go for Apple's new QuickDraw laser printer, the LaserWriter SC, which I'll mention later.) While \$1600 isn't exactly pocket change—it'll buy you three ImageWriters—it represents a significant drop from the PostScript models, which still cannot be had for much under four or five thousand dollars.

A canny consumer might view this phenomenon suspiciously and ask exactly

what one gives up by taking advantage of such a bargain. That is what I set out to discover by personally testing GCC's laser printer, the PLP. Several months before, for purposes of future comparison, I had procured the loan of a fire-breathing, \$5000 QMS 800+ Laser Printer, and had been delighted at every turn, finding fault only with its unwieldy bulk. In short, I spoiled myself.

This was a mistake that ruined the thrill of operating with the GCC machine, because instead of delighting in its considerable benefits, I found myself grumbling at its drawbacks. As a former PostScript machine jockey, my high point with the PLP came in the first few minutes when I discovered that I could actually lift the printer out of the box and onto my desk without risking a hernia. Since it virtually required a derrick (actually a guy I knew named Buddy) to get the QMS behemoth a few feet off the ground, I was favorably disposed toward the Personal LaserPrinter.

Installation was not a problem, as one does not need to purchase a \$50 AppleTalk connector. I did, however, have to clear off some space on my hard disk to make room for a couple of disks' worth of fonts. (Incidentally, without a hard disk, I would not try the PLP.)

There were two setup problems. One is the PLP's toner cartridge. Unlike the stuff contained in QMS and LaserWriter cartridges, the toner substance in the PLP—a coal-black dust that I imagine causes horrible diseases if breathed in—is not sealed off. In fact, when you move the computer, you're supposed to keep it level so that this gunk doesn't spill all over. I'm sure that in a perfect world where directions are followed carefully, none of this toner would find its way to the floor or the cuffs of a new blue shirt. But since human beings are in charge of replacing cartridges and unjamming paper from printer innards, I would have to say the world falls short of perfection. In other words, I assure you that if you use the Personal LaserPrinter for any length of time, part of your body or clothing is at some point going to look like Al Jolson. Be forewarned.

The other problem is limited to a hapless group of people Apple Computer has gyped, and won't admit it. These are the early Mac Plus owners, those who received the notorious "A" ROMs that work fine ex-

(continues)

Three smart steps to doin' the "Mac."



1. While you print in the background, run in the foreground.

SuperLaserSpool™, our smart print spooler, keeps you and your Mac® stepping out in the foreground—where you belong—while it routes your files to your hard or floppy disk for efficient background printing. Faster than

any other spooler around, SuperLaserSpool makes a great partner for *any* Mac 512e and up and any Apple® printer, with or without MultiFinder™. It gracefully handles multiple downloaded fonts and keeps pace with the latest versions of Macintosh® applications. In fact, it's even optimized to correctly spool PageMaker™ files. Some performance!

For networks, get the 5-diskette **Multi-User SuperLaserSpool**. Or choose **SuperSpool™** if you print exclusively with an ImageWriter®.

SuperLaserSpool: \$149.95

Multi-User SuperLaserSpool: \$395.00

SuperSpool: \$99.95



3. Click your files closed.

Locking sensitive files is the *only* step for anyone who works with confidential or private data. Now our encryption utility, **Sentinel™**, makes it so easy you'll waltz through it. For example, protection of your documents occurs right on your desktop: protected files appear with a lock symbol on the icon, or can be made invisible. And you get your choice of the Data Encryption Standard (DES), or our other fast and secure encryption algorithms, including our critically acclaimed SuperCrypt™, which will protect a 100K document in an incredible 5 seconds. And our intelligent "WorkSet™" feature keeps track

of protected files for you. Just enter one password and you can lock or unlock all the files in the set—in one swift move.

Sentinel: \$295.00

© 1988 SuperMac Software
Trademarks: SuperMac; SuperLaserSpool, SuperSpool, DiskFit, Sentinel, SuperCrypt, WorkSet. Apple: MultiFinder, Finder, AppleShare. Sun Microsystems: TOPS. Aldus: PageMaker. Registered: Apple: Apple, Mac, Macintosh, ImageWriter. Iomega Corporation: Bernoulli. Prices listed are suggested retail price.



2. Back-up.

DiskFit™ makes that *crucial* step of backing up your hard disk such a breeze you'll find yourself doing it again and again. DiskFit backs up your data on floppy disks, Bernoulli® cartridges, DTC/Kodak cartridges, another hard disk or 3M DC 2000 tape cartridges.

It knows its way around the disk so well that it backs up on a *file-by-file* basis, requesting additional backup media only as it needs them. It conveniently keeps your files in a finder accessible format. And with MultiFinder, DiskFit runs in the background, automatically keeping your data compact, safe and secure. For AppleShare™ or TOPS™, **Network DiskFit** will back up your servers *and* your workstations with full ownership attributes intact. How's that for a neat turn?

DiskFit: \$99.95

Network DiskFit: \$395.00



Do "The Super Mac" today:

Visit your SuperMac dealer

or order direct:

(800) 952-6300, ask for Dept. 912.

(In CA: 800-423-4440, ask for Dept. 912.)

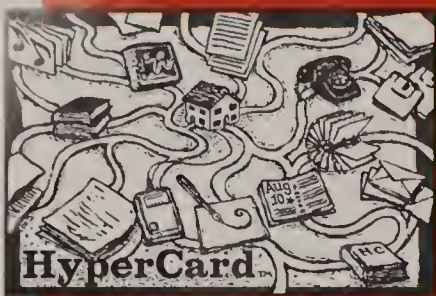
SuperMac Software
295 N. Bernardo Ave.
Mountain View, CA 94043
(415) 962-2900

SuperMac Europe
Langley Business Centre
11-49 Station Road
Langley, Slough
Berkshire SL3 8YL
011-44-753-49553

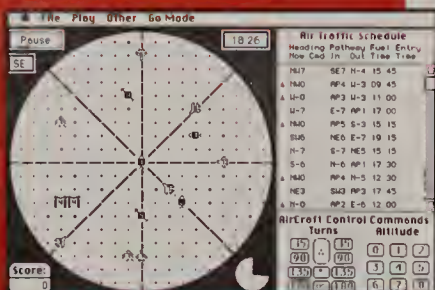


SUPERMAC
SOFTWARE
A division of Scientific Micro Systems

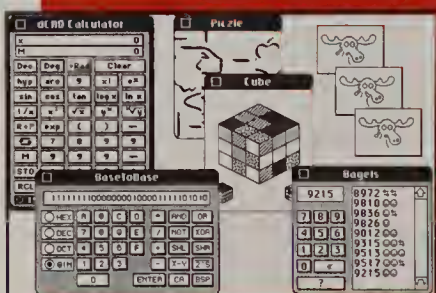
125 Stacks for HyperCard™



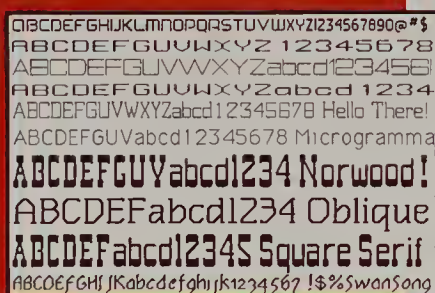
150 Games



250 DAs



225 Fonts



250 Pictures



VISA

MC

For a limited time only!
\$19.95 per set!

All five sets: Only \$89.95!

All sets on double-sided disks. Add \$5/set for single-sided.

Call 800-843-9497 (800-654-5181 in CA)

Order yours today!

Ask for our FREE 180-page catalog!



Educomp Computer Services
742 Genevieve, Ste. D
Solana Beach, CA 92075

Circle 71 on reader service card

Steven Levy

cept when SCSI peripherals are attached to the computer. In that case, unless the peripheral is turned on, the computer doesn't work at all. Apple fixed the problem when manufacturing new computers, but won't do anything for people stuck with the old one. People like me. This had not been such a terrible glitch—until I got the PLP. Because if the printer cable is connected to my system, I cannot use the Mac unless the printer is turned on. But it makes no sense to turn on the printer unless you're using it. Otherwise you have to cope with the noise of its fan—which sounds like a Greyhound bus warming up...in a garage. This emphasizes what readers of this column already know—unless you absolutely need it, don't buy a computer until it has been shipping for at least six months, and that includes Apple computers.

The Quick and the Dead

It was not until I actually *used* the Personal LaserPrinter that I fully appreciated its drawbacks. It is slow. Now the word *slow* is a comparative term. When I say this printer is slow, am I comparing it to a typist? To an antique daisy wheel printer? To an ImageWriter? No. I am comparing it to the PostScript printer that recently left my life. The comparison is unfair because the PLP costs less than half the price of the LaserWriter or the QMS 800+. This is what I kept telling myself as the Personal LaserPrinter tackled a Microsoft Word file. Believe me, I had plenty of time to tell myself things. Because I had done something very stupid. I had promised my Closest Friend that I would be able to churn out the manuscript for her book in a few hours, for delivery to her publisher. How slow, I figured, could the GCC printer be?

Let's just say that "a few hours" became measurable in days. Because while the QMS could spit out six pages a minute of Word copy no sweat, the PLP strained to do one page a minute. And this manuscript was around 750 pages.

It was not until I actually spoke to the GCC folks that I was convinced that my machine was not faulty—it was supposed to take that long. This is because the page composition takes place in my Mac Plus. If I had a Mac II, or a 68020 coprocessor in an SE, the process would have been shortened by perhaps 20 percent. On the other hand, if I had only a mere megabyte of memory in my Mac, and not the mighty 2½ megs I had recently installed, things would have taken even longer.

Just as I was getting this to press, GCC helped things along by releasing a new ver-

sion of its software that increased the PLP's speed somewhat and, more important, improved the quality of its draft mode, which does zip along at six pages a minute or so. Before this release, draft quality had looked like ImageWriter output produced with a worn ribbon. Now it's acceptable, depending on the font (New York is fine; Times looks terrible). Still, if getting pages of text out fast is important to you, you'd be better off spending a few hundred dollars more for Apple's QuickDraw LaserWriter SC, which uses a different technical approach that yields a faster text output rate.

Yet Another Car and Computer Analogy

The good news is that the finished PLP copy looked every bit as good as it did with the more expensive printer. I mean, it looked *great*. The letters were just as sharp as the higher-priced spread and the blacks looked even denser.

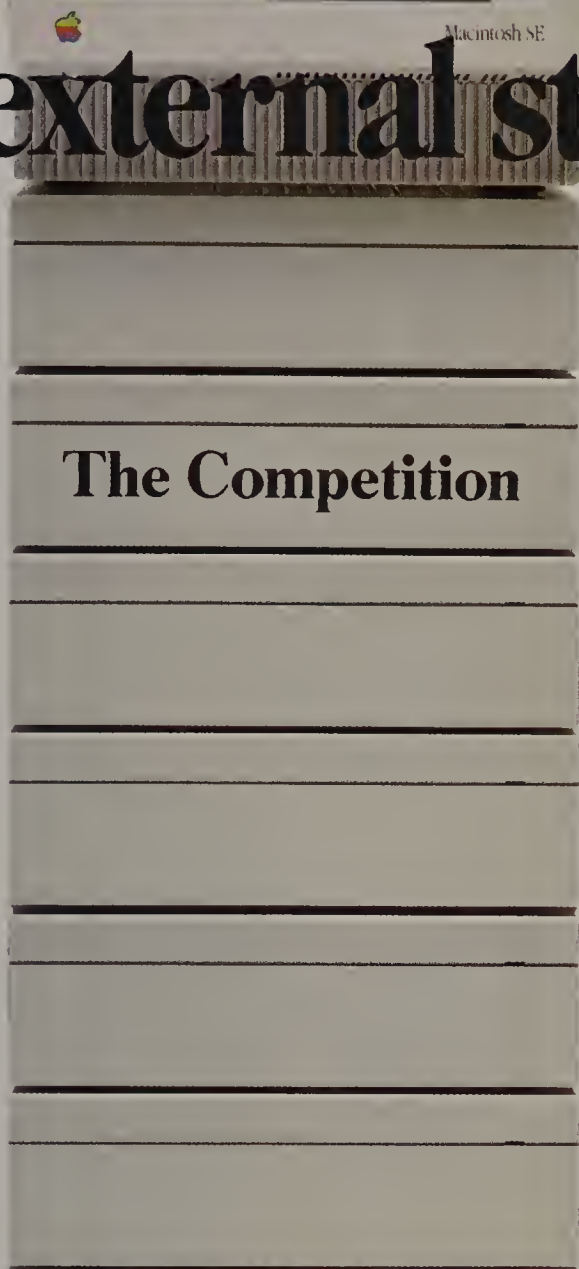
Let me dust off the computer writer's best friend, the auto analogy. Ah-hem. Using the PLP instead of a PostScript machine is like driving a used Toyota Tercel instead of a BMW. It is less comfortable and slower during the drive. But it gets you there. And, miraculously enough, as soon as you pull into the driveway, your beat-up Tercel transforms itself into a BMW! As far as the parking valet is concerned, you are a millionaire.

But, oy, when you're driving...you know it's a Tercel. Partly because the PLP runs by some strange rules, it has compatibility problems with some of the Macintosh world. GCC has been forthright about this, including a list of programs that work well with the printer only after certain adjustments are made in your working habits or your output. (One obvious problem is its nonsupport of PostScript; special effects in that language will not be printed.) But strange things sometimes crop up.

For instance, the PLP uses a mode of centering things on the page that is different from other printers. This sometimes makes margins wind up differently on the page from what you might expect. And page numbers, depending on the program, might not show up at all. For Microsoft Word 3.01, I had to make a special adjustment, positioning them 1½ inches from the margin—so they can appear on the page ½ inch from the margin. Of course, if someone else uses my Word files, that per-

(continues)

How to expand 20Mb of external storage to 120Mb



The Competition

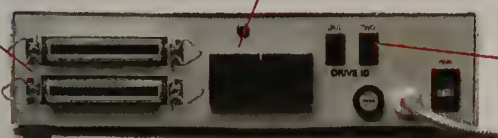


Only MASS MICRO Systems offers you the *POWER2 EXPAND!* for \$445

MASS MICRO Systems drives are designed with YOU and your Mac in mind! Our exclusive design allows you to start with 20Mb to 100Mb and expand your system up to 200Mb anytime you need the *POWER2 EXPAND!*

No Expensive SCSI terminator required!

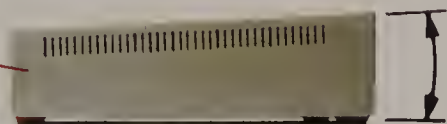
2 surge-protected switched outlets means one switch turns on your entire system



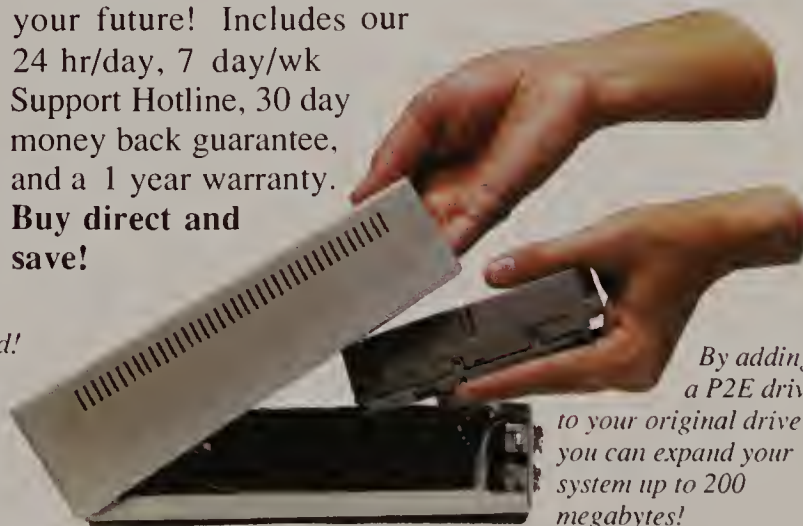
Precision push-button SCSI ID switches. No tools needed!

Lightning fast average access of less than 35ms, low power consumption, and a unique locking system to automatically store the heads on power down, give our drives real value. More than reliable, with a 25,000 hr MTBF (one of the highest in the industry) you can depend on them for a long, long time!

Ergonomic design gives you the optimum viewing angle



Order Today - get the *POWER2 EXPAND!* into your future! Includes our 24 hr/day, 7 day/wk Support Hotline, 30 day money back guarantee, and a 1 year warranty. **Buy direct and save!**



By adding a P2E drive to your original drive you can expand your system up to 200 megabytes!

MASS MICRO
s y s t e m s

(800) 253-8900 (408) 988-1200 in CA

3250 Jay Street ♦ Santa Clara ♦ CA ♦ 95054

Certified Apple Developer

Compatible with all Mac Plus, SE, & II's

MASS♦20e	23Mb	\$649
MASS♦30e	32Mb	\$849
MASS♦40e	41Mb	\$949
MASS♦50e	49Mb	\$1049
MASS♦65e	64Mb	\$1149
MASS♦100e	102Mb	\$1649

POWER2 EXPAND! Drives

P2E♦20	23Mb	\$489
P2E♦30	32Mb	\$549
P2E♦40	41Mb	\$649
P2E♦50	49Mb	\$749
P2E♦65	64Mb	\$849
P2E♦100	102Mb	\$1449

Circle 206 on reader service card

Purchase Requisition

QUANTITY	DESCRIPTION
1	MACINTOSH II
1	IBM PC AT

Impossible!
Warren!
Choose one or
the other—
S.

*The obvious solution
was unrealistic.*

“I would have
given up anything to
use a Macintosh, except
my PC software.”

"You can't have your Macintosh™ and PC too." Famous last words.

People say, "Where there's a will, there's a way." Which means I don't settle for words like No. Impossible. Can't be done. No way.

So when I decided I wanted a Macintosh, but didn't want to give up Lotus 1-2-3® or dBASE® III, I naturally set about looking for a way to have it all.

The fastest fix was to buy both an IBM® PC and a Macintosh. "Not possible," said the DP/MIS manager. "Pick one. Any one you want, as long as it's MS-DOS® compatible." Witty guy.

Then I searched everywhere for someone willing to loan me a PC in exchange for executive privileges. I was willing to give up anything, but I kept hearing No. Not interested.

Without another alternative in sight, I decided to surrender and settle for a PC. Then, I discovered an article on AST's newest products—

What I like best about AST's Mac86 and Mac286:

- I retain the benefits of the Mac desktop while running DOS
- I can cut and paste text from both MS-DOS and Macintosh environments
- I have full access to DOS programs and data through 5.25" MS-DOS floppy drives
- My MS-DOS files share Macintosh hard disk volumes

MS-DOS co-processors for the Macintosh II and Macintosh SE. The cavalry had arrived.

The article said AST's Mac86™ and Mac286™ allow you to actually run MS-DOS application programs on your Macintosh. Just plug the DOS

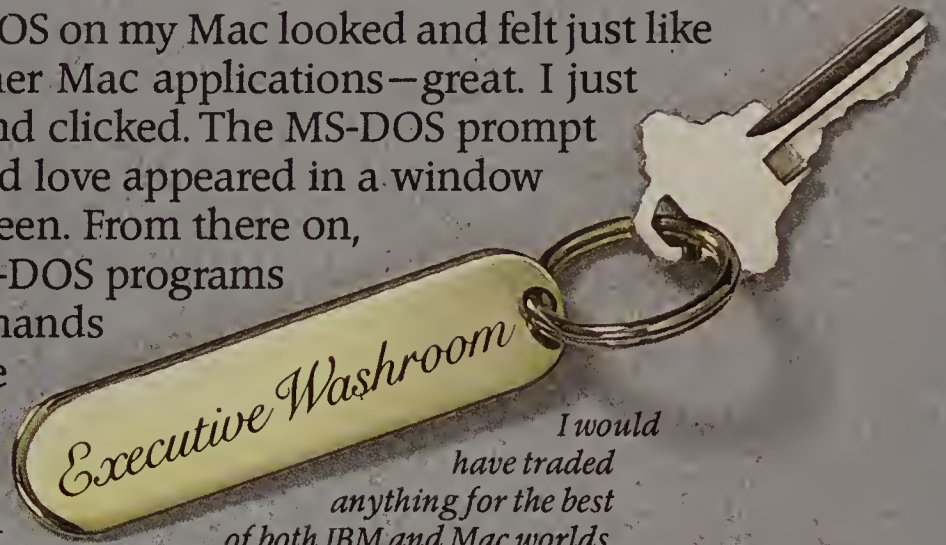
processor into your Macintosh II—Mac86 into an SE—and load your favorite MS-DOS application software onto the Mac's hard disk. I was sold.

MS-DOS on my Mac looked and felt just like all my other Mac applications—great. I just pointed and clicked. The MS-DOS prompt I know and love appeared in a window on my screen. From there on, I used MS-DOS programs and commands as if I were working on a PC.

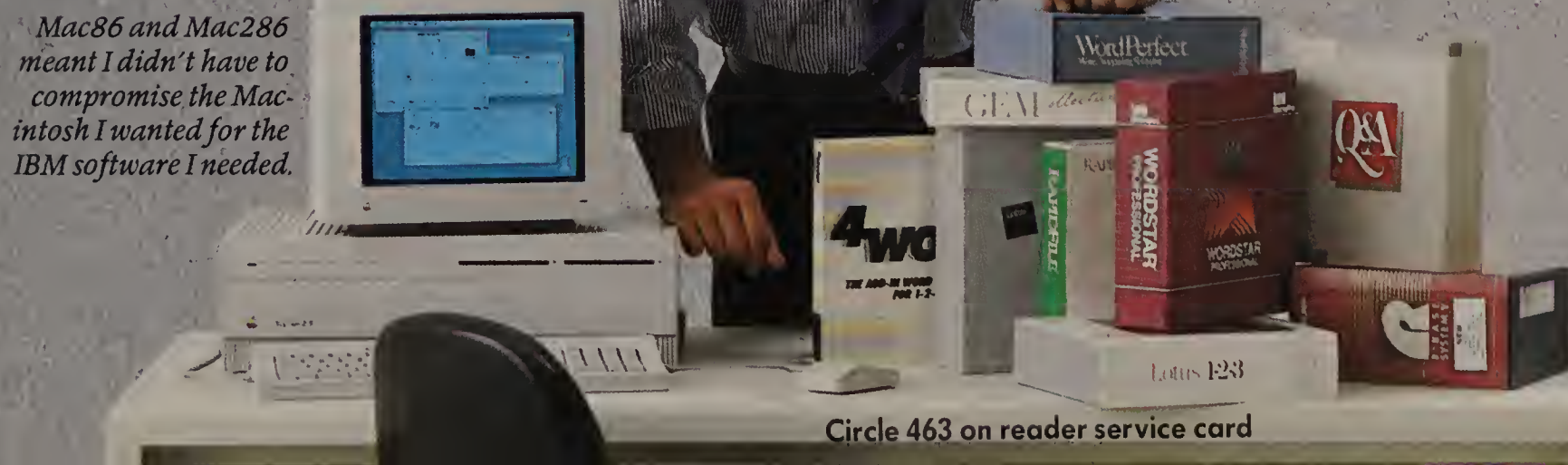
I even moved Macintosh files into MS-DOS, sometimes cutting and pasting parts from one environment to the other. And when I was finished with my PC and Macintosh files, I stored them both on the same Macintosh hard disk without any clumsy file transfer procedures to slow me down.

Back in the Macintosh environment, I still had immediate access to all of my PC files. Using Macintosh software, I reopened a PC file, enhanced it, then merged it with a Mac file. And when I was finished, I printed it on the LaserWriter®.

I guess the moral of this story is: You CAN have your Macintosh and PC too. Call AST today to find where you can buy Mac86 or Mac286. (714) 553-0340. BBS: (714) 660-9175. FAX: (714) 660-8063.



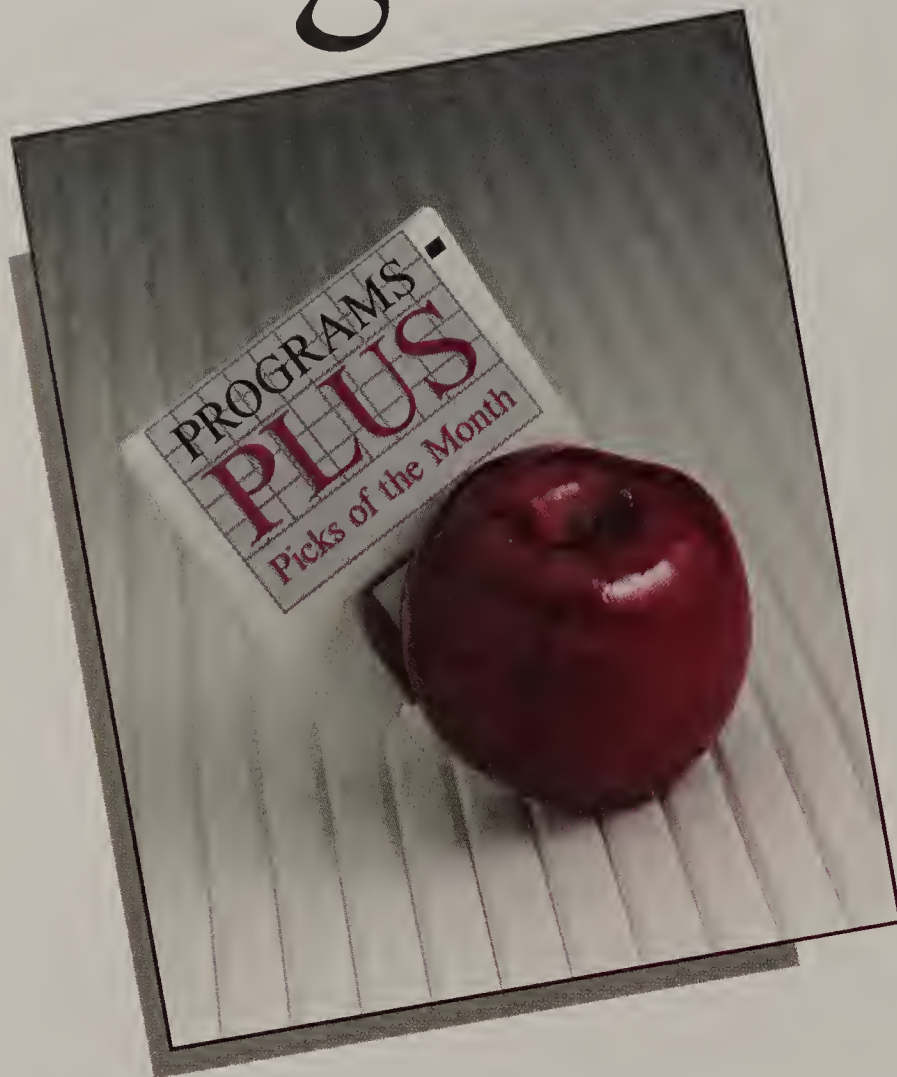
Mac86 and Mac286 meant I didn't have to compromise the Macintosh I wanted for the IBM software I needed.



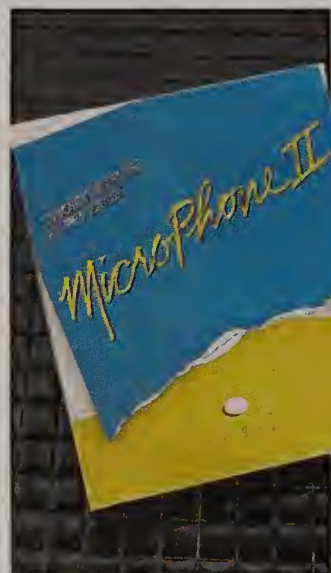
AST
RESEARCH INC.

We
Make
Apples
Grow!

Programs & Peripherals



Microphone II by Software Ventures



Microphone II is one of the most sophisticated, while easy to use communications programs available for any computer. The unique design of this program makes it an extremely powerful tool for the experienced user, and a saviour for the novice. Pre-programmed icons make it simple to access major information services such as Compuserve or Dow Jones, with automatic log-in and sign-on. You can record your entire session through the "Watch Me" feature, and replay it later through a single keystroke. The new version of **Microphone II** is now Multifinder compatible, and comes with a free copy of Glue, a graphics/text transfer utility.

Microphone 1.1 209.

Utility Software

Apple Computer Switcher Const. Kit	14.	Read-It! TS (For Thunderscan)	79.
ALSoft Disk Express 1.10	26.	Read-It! O.C.R. (For Image Scanners)	199.
Font/DA Juggler Plus	Call	Software Power Power-up Disk Optimizer	33.
Berkeley System Design Stepping Out II	55.	Software Supply	
Beyond Inc. Menu Fonts 2	32.	Suitcase or Power Station	38.
CE Software QuickKeys (Macro Program)	57.	SRT MacTree	39.
DiskTop 3.0 or CalendarMaker 3.0	29.	SuperMac Software SuperSpool	42.
Central Point Software Copy II Mac		SuperLaserSpool	82.
(Includes MacTools)	Special 20.	Multi-User SuperLaserSpool	199.
Electronic Arts Disk Tools Plus	31.	Diskfit 1.4	54.
Fifth Generation Systems		Network Diskfit 1.3	203.
FastBack For The Macintosh	59.	Sentinel	155.
Ideaform Disk Quick V2.10	25.	Synex Mac Envelope	15.
HyperBook Maker	30.	Mac Invoice	25.
Infosphere MacServe (Network Software)	158.	TOPS Tops For The Macintosh 2.0	
LaserServe (LaserWriter Print Spooler)	63.	or Net Print	119.
Olduvai Software ADBridge	67.	Williams & Macias	
DA-Switcher II	25.	myDiskLabeler w/Color	31.
Font Share	149.	myDiskLabeler w/LaserWriter Option	34.
Icon-It! (Assign Icons to Menu Items)	39.	Working Software, Inc. Findswell	29.

Rags to Riches 3 Pak GL/AR/AP Version III by Chang Laboratories

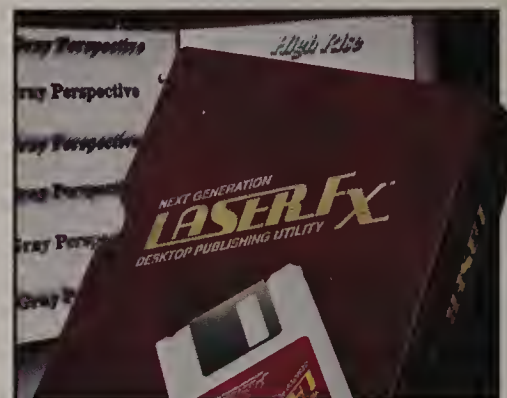


Rags to Riches Version III provides users more "Choices" in their accounting selection, setup, operation and reporting! Each module has more options to let you customize the operation to the way YOU do business. It gives you more flexibility to format reports, invoices and statements to suit your personality. This is the fastest accounting package available for the Macintosh. Success in accounting can be yours with **Rags to Riches Version III**.

Rags to Riches 3 Pak (GL/AR/AP) Version III 279.

Laser Fx by Postcraft International Inc.

Since the advent of the desktop publishing industry, no product has proven to be as useful, or as easy to use as **Laser Fx** from Postcraft. Simply take any PostScript font and use any of the 30 special effects to create a dazzling typographical masterpiece. You can print directly from **Laser Fx** or paste into Quark XPress, Ready, Set, Go!, Microsoft Word, or most other popular desktop programs. It can also be used to create special effects in newsletters, designing logos, or adding that extra pizzazz to your presentation. **Laser Fx** also has the ability to read PICT or paint files created in other programs such as MacDraw or MacPaint. Bring your desktop software and laser printer into the next generation with **Laser Fx**.



Laser Fx 117.

Desk Accessory Programs

Affinity Microsystems Tempo II	94.	Imagine Software	
AffiniFile	46.	Smart Alarms & Appointment Diary	35.
Borland SideKick V2.0	59.	Multi-User Appointment Diary with Smart Alarms	89.
Cortland		Solutions, International	
Top Desk	32.	SmartScrap & The Clipper	36.
Greene, Inc.		Symmetry HyperDA (Req. 512K)	38.
QuickDex 1.4	39.		

Languages

Apple Computer MacPascal	99.	Microsoft	
Borland Turbo Pascal	65.	Microsoft Basic Interpreter 3.0	65.
Turbo Pascal Numerical Methods	63.	Microsoft Basic Compiler 1.0	127.
Turbo Pascal Tutor	43.	Microsoft Fortran Compiler 2.2	180.
Consulair		THINK Technologies Lightspeed C	109.
Macintosh 68000 Development System	59.	Lightspeed Pascal	65.
Mainstay		CAPP's for Lightspeed C or	
V.I.P. (Visual Interactive Programming)	85.	CAPP's for Lightspeed Pascal	49.

Communications Software

Apple Computer MacTerminal	99.	Software Ventures	
Compuserve Compuserve Starter Kit	24.	Microphone II (Includes Glue)	Special 209.
DataViz MacLink Plus with Cable	145.	Think Technologies, Inc.	
Freesoft Red Ryder V10	49.	InBox-Starter Kit V2.0	
Palantir InTalk V3	99.	(3 Personal Connections)	209.

SAVE
\$23⁴⁰
*off the
cover
price*

12 Issues for \$24!
When you subscribe today

☐ Send me 1 year (12 monthly issues) of
MACWORLD for \$24. Save 20% off the basic
subscription rate.

☐ SAVE EVEN MORE! 2 years (24 monthly issues)
for \$37.90.

Please Bill me later.

4BTQ2

Name _____

Company _____

Address _____

City/State/Zip _____

By regular subscription, *MACWORLD* is \$30 for 12 issues. The annual cover price is \$47.40 (12 issues).
Offer available to subscribers in the U.S. only. Please allow 6-8 weeks for delivery of your first issue.



MACWORLD

The Macintosh® Magazine

SAVE
ALMOST
50%

**SEE
BACK**



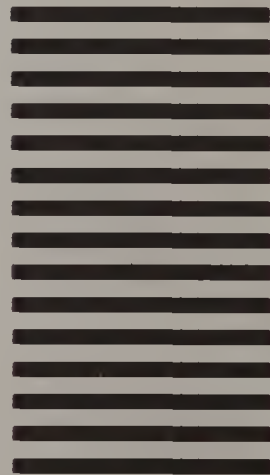
NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Subscription Department
P.O. Box 51666
Boulder, Colorado 80321-1666



to Polish Up Your Mac...

Canvas by Deneba Software

Canvas is truly the complete graphics environment for the Macintosh. If you need a draw program, a paint program, text editing, high resolution images, embedded PostScript or more, then **Canvas** is for you. You can rotate objects, create multiple duplicates of an object or group of objects, or view and edit drawings and text at any magnification or reduction from 3.125% to 3,200% of the original. You can also use the desk accessory version of **Canvas** (included) to edit your graphics without leaving your favorite desktop program, database, spreadsheet or word processor.



Canvas 109.

Cutting Edge 800k Drive by Cutting Edge, Inc.

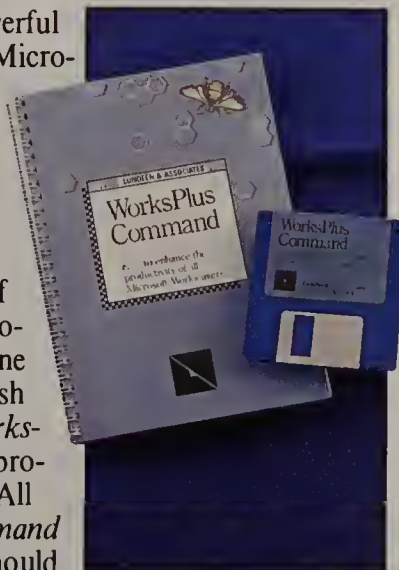


The **Cutting Edge 800k Drive** features an LED in-use light, a manual eject button, and a compact case (available in beige or platinum) that matches Mac aesthetics. It's compatible with old and new Mac ROMs so you can use it on a standard Mac 512k, a MacPlus, or a Mac SE. The **Cutting Edge 800k Drive** also has a MTBF rating of over 11,000 hours, and offers advanced power and design at an economical price.

Cutting Edge 800k External Drive 175.

WorksPlus Command by Lundeen & Associates

WorksPlus Command is the most powerful macro package available for use with Microsoft Works. You can record an unlimited number of keystrokes, open and close documents, even move information between Works modules, and execute them with a single keystroke. You can print multi-column labels and reports, automatically generate table of contents and indexes for your word processing documents, even dial your phone from your database. For those who wish to write your own unique macros, **WorksPlus Command** includes a full macro programming language similar to Pascal. All this and more makes **WorksPlus Command** a program no Microsoft Works user should be without.



WorksPlus Command 60.

MacSnap Internal Memory Expansions by Dove Computer Corporation



It's a safe bet that no matter what Macintosh model you have, Dove Computer has a **MacSnap** memory expansion product that matches your needs. That's because Dove has an extensive line of high quality memory and productivity enhancement products available. All Dove products are easy to install and represent a superior value! We've selected some of the most popular models, and are offering them at special prices. All models listed include Dove's RamSnap software, their intelligent ram management software.

MacSnap 2SE	289.
MacSnap 524E	120.
MacSnap 524S	215.
MacSnap 548E	359.
MacSnap 548S	435.
MacSnap Plus 2	249.

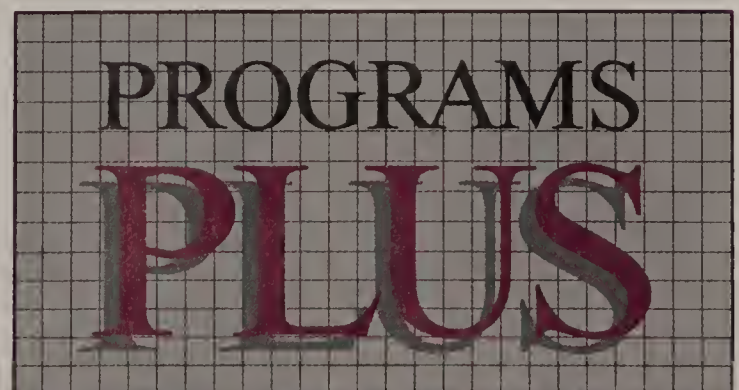
Copy II Mac by Central Point Software

Copy II Mac has always been the standard by which all other backup software is compared to, and it keeps getting better! It was awarded the 1987 MacWorld-World Class Award, MacUser Editors Choice Award, A+ Readers Choice Award, just to name a few. **Copy II Mac** is really seven applications in one, including the ability to make backups of "copy protected" software (for archival purposes only), and Copy II Hard Disk, which lets you run some protected software directly from your hard disk, RAM disk, etc. Also included is MacTools, which is a general disk and file utility with a variety of useful options, including a hard disk undelete files option. It's plain to see why **Copy II Mac** has already sold over 100,000 copies.



Copy II Mac 20.

Positively A Plus



800/832-3201

& Phenomenal Prices . . .

DataBase Management

Activision Focal Point	59.	Fox Software Fox Base Plus	214.
Business Class or City to City (<i>each</i>)	32.	Fox Base Runtime	162.
Reports for Hypercard	62.	Microsoft Microsoft File 1.05	120.
Acius 4th Dimension	559.	Nantucket Software	
Apple Computer HyperCard	44.	McMax (<i>dBase III Compatible</i>)	179.
Ashton Tate dBASE Mac 1.0	295.	Nashoba Systems FileMaker Plus	149.
Blythe Software Omnis 3 Plus/ <i>Express</i>	279.	Odesta Double Helix II	329.
Borland Reflex Plus	165.	ProVUE Development OverVUE 2.1	149.
Chang Laboratories		OverVUE 2.1E	156.
C.A.T. Contacts*Activities*Time	229.	Software Discoveries RecordHolderPlus	45.

Business Software

Apple Computer MacProject	159.	Mac Flow or Mac Schedule	119.
Bravo Technologies MacCalc	83.	Capture	38.
Cricket Software Cricket Graph	119.	Micro Planning Software	
Cricket Presents...	289.	Micro Planner Plus	279.
Pict-O-Graph	105.	Microsoft	
Deneba Software Comment	59.	Microsoft Works 1.1 with Spellswell	189.
Xtra 2.0	109.	Microsoft Multiplan 1.11	120.
Layered		Microsoft Excel 1.04	239.
Notes For Excel or		Microsoft PowerPoint	239.
Microsoft Works (<i>each</i>)	41.	North Edge Software Timeslips III	119.
Legisoft/Nolo Press WillMaker 2.0	30.	Satori Software Bulk Mailer 3.0	79.
Lotus Jazz 1A	189.	Bulk Mailer Plus	195.
Lundeen & Associates		Legal Billing	369.
WorksPlus Commands	Special 60.	Legal Billing II	539.
MacroPac International		Project Billing	409.
101 Macros For Excel	49.	Shana Enterprises Fast Forms	72.
Mainstay Think 'n Time	69.	Turner Hall Publishing MacSQZ!	34.

Word & Outline Processors

Apple Computer MacWrite	99.	Microsoft Write	114.
Living Videotext		MindWork Software MindWrite 1.1	159.
More 1.1C (<i>Color Version</i>)	175.	Symmetry Acta V2.0	36.
Microsoft Microsoft Word 3.01	253.	T/Maker Company WriteNow V2.0	98.

Spelling & Grammar Checkers

Aegis Development		Lundeen & Associates	
Doug Clapp's Word Tools	42.	WorksPlus Spell 1.1	46.
A.L.P. Systems MacProof 3.0		Microlytics, Inc.	
(<i>Requires MacPlus</i>)	115.	Word Finder (<i>Synonym Finder</i>)	35.
Batteries Included Thunder! 1.23	31.	Sensible Software Sensible Grammar	57.
Deneba Software Spelling Coach 3.0		Working Software, Inc.	
(<i>Webster's/Medical/Legal/Hyphenation</i>)	54.	Spellswell 2.0	42.
Spelling Coach 3.0 Professional		Spellswell Medical Dictionary	55.
(<i>Adds Definitions & Thesaurus</i>)	109.	Spellswell Legal Dictionary	24.
Coach Merriam Webster's Thesaurus 2.0	36.	Lookup (<i>Makes Spelling Suggestions</i>)	29.

Desktop Publishing

Addison-Wesley TEXTures	279.	Postcraft International, Inc.	
Aldus Corporation PageMaker 3.0	475.	Laser FX	Special 117.
Allan Bonadio Associates		Laser FX Font Packs #1-8 (<i>each</i>)	30.
Expressionist 1.11	49.	Quark, Inc. QuarkXPress V2.0	Call
Ann Arbor FullWrite Professional	169.	Solutions, International	
Boston Publishing Systems		Super Glue	52.
The MacPublisher III	119.	Target Software Scoop	295.
Letraset Ready, Set, Go! 4.0	279.	Word Perfect Corporation	
ImageStudio	279.	Word Perfect for the Macintosh	189.

Accounting Packages

Aatrix Software Aatrix Payroll V3.0	129.	Rags to Riches GL, AR, or AP	120.
Chang Labs		Layered Insight One Write	189.
Free Inventory or Professional Billing		MECA	
with Purchase of 3-Pak!		Managing Your Money	137.
New Enhanced Version III Modules!		Migent In House Accountant	119.
Rags to Riches 3-Pak 3.1		Monogram	
(GL/AR/AP)	Special 279.	Business Sense	279.
Professional 3-Pak		Dollars & Sense 4.0	81.
(GL/Professional Billing/Payables)	359.	Peachtree	
Retail Business 3-Pak		Back To Basics 3-Pak (GL/AR/AP)	139.
(GL/AP/Inventory Control)	359.	Survivor Software	
Inventory Control 2.6 or		MacMoney 3.0	
Professional Billing 2.6	239.	(<i>Enhanced Version</i>)	69.

Statistics & Math Packages

BrainPower		Borland Eureka! The Solver	129.
StatView 512 Plus	175.	Systat Systat 3.1 (<i>Specify Mac 512K,</i>	
Math View Professional	145.	<i>MacPlus, or Mac II</i>)	459.

Graphics Software

ABA Software Draw It Again Sam...	89.	Micro: Maps MacAtlas Paint Version	32.
Adobe Systems Adobe Illustrator		MacAtlas Professional	129.
(<i>MacPlus, SE & Mac II</i>)	379.	Miles Computing	
Aldus Freehand	389.	Mac The Ripper, Orchestra of Fonts,	
Altsys Corp. FONTastic Plus	47.	People-Places-Things, or	
Fontographer 2.2	239.	Taking Care of Business (<i>each</i>)	27.
Ann Arbor Softworks Full Paint	49.	Mindscape GraphicWorks 1.1	84.
Apple Computer MacPaint	99.	Olduvai Software Post-ART (<i>3-Disk Set</i>)	35.
Broderbund Print Shop	37.	Silicon Beach Software SuperPaint	79.
Casadyware Fluent Fonts 2.0 (<i>2-Disk Set</i>)	26.	Digital Darkroom	107.
Fluent Laser Fonts Vol. 1-18 (<i>ea</i>)	45.	Silicon Press	41.
Computer Friends Modern Artist	109.	Solutions International	
Deneba Software Canvas 1.0		The Curator (<i>Catalog Your Art</i>)	79.
(<i>Includes Desk Accessory</i>)	Special 109.	Springboard Certificate Maker	24.
Canvas DA	59.	SuperMac Software Pixel Paint	259.
Dubl-Click Software		Symmetry PictureBase 1.2	59.
World Class Fonts! (<i>Both Volumes</i>)	36.	T/Maker	
WetPaint (<i>Both Volumes</i>)	36.	Click Art Letters I, Letters II, Personal	
Enzan-Hoshigumi USA		Graphics, Publications, Effects,	
MacCalligraphy 2.0	109.	Business Image, or Holidays (<i>each</i>)	28.
Japanese Clip Art Scroll 1		Christian Images	35.
"Heaven" or Scroll 2 "Earth"	52.	Click Art EPS Illustrations	Call
Japanese Clip Art "Borders" Scroll	69.	Click Art Laser Fonts: Plymouth,	
Foundation Publishing Comic People	26.	Bombay, or Seville (<i>each</i>)	45.
Comic Strip Factory	45.	Unison World Chest Top Publishing	34.
Macromind Videoworks II	118.	Zedcor DeskPaint 1.0	39.

CAD Products

Apple Computer MacDraw	159.	Enabling Technologies Easy 3D	79.
Challenger Software		Innovative Data Design MacDraft 1.2B	149.
Mac 3D (<i>Enhanced Version 2.0</i>)	119.	Silicon Beach Software Super 3D	159.
Cricket Software Cricket Draw	169.	Super 3D Enhanced (<i>Mac II</i>)	249.

Educational/Creative Software

Baron's Baron's SAT	35.	Great Wave Software TimeMasters	22.
Bogas Productions Studio Session	52.	KidsTime or NumberMaze	26.
Broderbund Jam Session	30.	CrystalPaint	32.
Geometry, Calculus or Physics	62.	Concertware+ 4.0 or American Discovery	39.
Type!	31.	Concertware+ MIDI 4.0	79.
Where in the World is Carmen San Diego	29.	Hayden MusicWorks	29.
Coda Mac Drums	26.	Score Improvement System for the SAT	58.
Compu-Teach Once Upon A Time	23.	Learning Company Reader Rabbit	34.
Stepping Stones Level I or Level II	23.	Mindscape Perfect Score SAT	
Davidson & Associates Speed Reader II	39.	w/The Perfect College	46.
Math Blaster or Word Attack!	27.	Nordic Software	
Electronic Arts		MacKids Educational Programs (<i>each</i>)	29.
Deluxe Music Construction Set V2.0	61.	Rubicon Publishing	
1st Byte/Electronic Arts		Dinner at Eight-Silver Palate Bundle	51.
Kid Talk, Speller Bee,		Simon & Schuster Typing Tutor IV	35.
First Shapes, or Math Talk	32.	Speed Reading Tutor IV	32.
Mathtalk Fractions, First Letters &		Springboard Early Games for	
Words, or Smoothtalker	32.	Young Children or Easy as ABC	28.

Disk Drives/Hard Disks/Upgrades

AST Research		SCSI Interface/Port	85.
Mac86 Co-Processor (<i>Mac SE</i>)	419.	MacSnap Toolkit (<i>for x driver,</i>	
Mac286 Co-Processor (<i>Mac II</i>)	1049.	<i>opener & grounding set</i>)	15.
Central Point		Everex 20D (<i>20Mg Hard Disk</i>)	520.
Central Point 800K External Drive	185.	20 Deluxe	585.
Copy II PC Deluxe Option Board	129.	MacMemory, Inc.	
CMS 20MB External Subsystem		Turbo SE (<i>16 Mhz 68000</i>	
(<i>MacPlus/SE/II</i>)	569.	<i>Accelerator for the Mac SE</i>)	399.
40MB External Subsystem		Motorola 68881	
(<i>MacPlus/SE/II</i>)	919.	(<i>Math Coprocessor for Turbo SE</i>)	349.
60MB External Subsystem		MaxPlus Mega (<i>2MB Upgrade</i>	
(<i>MacPlus/SE/II</i>)	789.	<i>with 1MB Chips for MacPlus</i>)	345.
60MB Tape Backup (<i>MacPlus/SE/II</i>)	739.	Personal Computer Peripherals	
Cutting Edge		Beige or Platinum Color. Optional	
Cutting Edge 800k Drive	Special 175.	<i>Built-In Modems Available.</i>	
XL 30 Plus or XL 45 Plus	Call	MacBottom HD-21	
Dove Computer Corporation		(<i>20+MB SCSI Hard Disk</i>)	749.
MacSnap 524 (<i>512K to 1MB</i>)		MacBottom HD-32	
or 524E (<i>512E to 1MB</i>)	Special 120.	(<i>32MB SCSI Hard Disk</i>)	879.
MacSnap 524S		MacBottom HD-45	
(<i>512E to 1MB w/SCSI</i>)	Special 215.	(<i>45MB SCSI Hard Disk</i>)	1139.
MacSnap 548 (<i>512K to 2MB</i>)		MacBottom 20 (<i>20+MB Serial Hard</i>	
or 548E (<i>512E to 2MB</i>)	Special 359.	<i>Disk for Mac 512k & MacPlus</i>)	839.
MacSnap 548S		Rodime Rodime 20 Plus	
(<i>512E to 2MB w/SCSI</i>)	Special 435.	(<i>External 20MB SCSI</i>)	629.
MacSnap Plus 2 (<i>MacPlus to</i>		Rodime 201 Plus	
<i>2MB Non Expandable</i>)	Special 249.	(<i>Internal 20MB for MacPlus</i>)	629.
MacSnap 2S or 2H (<i>1MB to</i>		Rodime 45 Plus	
<i>2.5MB for MacPlus/SE</i>)	449.	(<i>External 45MB SCSI</i>)	939.
MacSnap 4S or 4H (<i>1MB to</i>		Rodime 450RX (<i>Internal 45MB</i>	
<i>4MB for MacPlus/SE</i>)	879.	<i>for Mac SE & Mac II</i>)	829.

... Positively A Plus!

Game Software

Access World Class Leader Board Golf	24.	Business Card Maker	36.
Accolade Hard Ball	23.	Microsoft Flight Simulator 1.02	32.
Activision Firepower	16.	Miles Computing Inc.	
Shanghai or Romantic Encounters	24.	Downhill Racer or Quintette	24.
Tass Times in Tonetown	21.	Harrier Strike Mission II	
Might and Magic	37.	or The Fool's Errand	27.
Artworx Bridge 5.0	22.	Fool's Errand Hint Booklet	7.
Avalon Hill Mac Pro Football	29.	Mindscape Balance of Power,	
Baudville Award Maker Plus	27.	Crossword Magic or Citadel	30.
Broderbund Ancient Art of War	27.	Deja Vu: A Nightmare Comes True	30.
Bullseye Software		King Of Chicago, Shadowgate or	
Fokker TriPlane or Ferrari Grand Prix	33.	Trust and Betrayal	30.
Electronic Arts Ogre	20.	Defender of the Crown, Siboot	
Reach for the Stars	32.	or The Uninvited	30.
Starfleet I	37.	Practical Computer Applications	
Venture's Business Simulator	47.	MacGolf 2.0 or MacRacquetball V2.0	35.
ChessMaster 2000, Patton vs Rommel		MacCourses	34.
or Scrabble	28.	Psion Psion Chess (3D & Multi-Lingual)	31.
Archon, One-On-One, Pinball Construction		Sierra On-Line Space Quest	30.
Set, Seven Cities of Gold, Software		King's Quest I, II, or III (each)	30.
Golden Oldies or SkyFox (each)	15.	Leisure Suit Larry	24.
EPYX Winter Games		Police Quest	35.
or Sub Battle Simulator	24.	Silicon Beach Software	
Hayden Software Sargon III	29.	Enchanted Scepters	21.
Infinity Software, LTD. Go	25.	Dark Castle or Apache Strike	27.
Infocom Bureaucracy, Leather Goddesses		World Builder	41.
of Phobos, Nord & Bert, Plundered		Simon & Schuster	
Hearts, Sherlock, or Stationfall (each)	24.	Star Trek (The Kobayashi Adventure)	24.
Beyond Zork	32.	Sir-Tech Mac Wizardry	35.
Hitchhiker's Guide to The Galaxy	18.	Spectrum Holobyte Solitaire Royale	19.
Science Fiction Classics	35.	Sphere, Inc. GATO, Orbiter, or Falcon	26.
Zork Trilogy	44.	XOR Software NFL Challenge	65.
Intracorp Bumper Sticker Maker	35.	Pro Challenge	31.

Laser Printers & Digitizers

AST Research TurboLaser P/S	3559.	New Image Technology Magic Digitizer	
TurboScan	1199.	(Mac I28/512k or MacPlus Version)	249.
Impulse		Summagraphics MacTablet 12x12 size	379.
Impulse (MacNifty) Audio		ThunderWare ThunderScan V4.0 with	
Digitizer V2.0 w/Soundwave	149.	Power Port (Mac 512K, 512K Enhanced,	
Koala Technologies Corp.		MacPlus, and Macintosh SE)	199.
MacVision (Digitizer)	169.	Mac II Power Accessory	42.

Accessories

Abaton ProPoint (ADB TurboMouse		Apple Security Kit	34.
for Mac SE & Mac II)	119.	Polarizing Filter	33.
Bech-Tech Fanny Mac (Beige or Platinum)	65.	Printer Muffler 80	38.
Cambridge Automation Numeric Turbo	99.	Printer Muffler 132	51.
Central Products		Control Center	63.
MacOpener (All In One Mac Tool)	16.	System Saver Mac (Beige or Platinum)	64.
Curtis Manufacturing		Super Base	Call
Diamond-Surge Suppressor-SP-1	29.	System Saver SE	Call
Emerald-Surge Suppressor-SP-2	36.	Masterpiece Mac II	Call
Ruby-Surge Suppressor-SPF-2	55.	A/B Box (MacPlus Only)	63.
Sapphire-Surge Suppressor-SPF-1	47.	Turbo Mouse (Reg. or ADB)	82.
Cutting Edge Cutting Edge		Lightgate Felix (Second Generation	
EADB-105 (Mac SE & Mac II)	139.	Pointing Device)	99.
DataDesk MAC-101 Keyboard/Beige		Mouse Systems A+ Mouse (MacPlus)	69.
(I28k/512k & MacPlus)	139.	A+ ADB Mouse (Mac SE/Mac II)	89.
MAC-101 ADB Keyboard/Platinum		Moustrak MousePad 7"x9" Size	8.
(Mac SE & Mac II)	139.	MousePad 9"x11" Size	9.
Ergotron		Moustrak L/F (Low Friction)	9.
MacTilt or MacTilt SE (Platinum Color)	69.	Nuvotech	
Mouse Cleaner 360°	15.	EasyNet (Specify Din 8 or DB-9)	27.
I/O Design		Orange Micro Grappler C/Mac/GS	
Mac Luggage Available in Navy		(Parallel Interface for the Mac)	77.
or Platinum Gray		Grappler L/Q (Parallel Interface	
Macinware Plus Carrying Case	64.	for 24 Pin & Laser Printers)	99.
Macinware SE Carrying Case	74.	Orchid Technology ColorVue SE	505.
Imageware II Carrying Case	44.	Ribbons Unlimited	
Kalmar Designs		Available in Black, Blue, Brown, Green,	
Teakwood Roll-Top Disk Cases:		Orange, Purple, Red, Yellow, Silver & Gold	
Micro Cabinet (holds 45 disks)	14.	ImageWriter Ribbon-Black	4.50
Double Micro Cabinet (holds 90 disks)	20.	ImageWriter Ribbon-Color	5.
Triple Micro Cabinet (holds 135 disks)	28.	ImageWriter Rainbow Pack (6 Colors)	25.
Kensington External Disk Drive Cover	8.	ImageWriter II-Four Color Ribbon	11.
Extra Long ADB Keyboard Cable	20.	Silicon Comforts MacChimney	
Macintosh II Stand	25.	(Very Effective Cardboard	
Macintosh II Monitor Cable Extension	33.	Laminate Convection Cooling Device)	16.
Mouse Pocket (Reg. or ADB)	8.	SoftStyle MacEnhancer	165.
Mouseway (Mousepad)	8.	The Madson Line	
ImageWriter or ImageWriter II Cover	9.	Professional Series Carry	
Macintosh Plus/SE Dust Cover	9.	Cases In Black Ballistic Nylon	
Mouse Cleaning Kit w/Pocket	17.	Mac(Plus) Carry Case	79.
Disk Drive Cleaning Kit	20.	Mac SE Carry Case	99.
Tilt/Swivel	22.	ImageWriter I (II) Carry Case	75.
Universal Copy Stand	23.	TOPS Tops Tele-Connector DB-9	39.

Blank Media

Single Sided 3 1/2" Diskettes		Double Sided 3 1/2" Diskettes	
BASF 3 1/2" SS/DD Disks (box of 5)	8.	BASF 3 1/2" DS/DD Disks (box of 5)	9.
Bulk (Sony) 3 1/2" SS/DD Disks (10)	12.	Bulk (Sony) 3 1/2" DS/DD (10)	16.
Sony 3 1/2" SS/DD Disks (box of 10)	13.	Centech 3 1/2" DS/DD Color Disks (10)	19.
Centech 3 1/2" SS/DD Color Disks (10)	16.	Sony 3 1/2" DS/DD Disks (box of 10)	18.
Fuji 3 1/2" SS/DD Disks (box of 10)	13.	Fuji 3 1/2" DS/DD Disks (box of 10)	19.
Maxell 3 1/2" SS/DD Disks (box of 10)	13.	Maxell 3 1/2" DS/DD Disks (box of 10)	20.
Verbatim 3 1/2" SS/DD Disks (box of 10)	13.	Verbatim 3 1/2" DS/DD Disks (box of 10)	20.
3M 3 1/2" SS/DD Disks (box of 10)	14.	3M 3 1/2" DS/DD Disks (box of 10)	20.
C.Itoh Color Disks SS/DD (box of 10)	22.	C.Itoh Color Disks DS/DD (box of 10)	25.

Modems

Everex		Promodem 2400 (Hayes Compatible)	309.
Emac 2400 Baud	225.	Mac Pack w/Procom M and Cable	
Hayes Microcomputing		(Specify Mac or MacPlus)	49.
Smartmodem 1200	299.	Shiva Net Modem V1200	369.
Smartmodem 1200 Mac		Net Modem V2400	489.
w/Smartcom II & Cable (MacPlus)	359.	Net Modem X232	309.
Smartmodem 2400	449.	Net Bridge	309.
Migent		Supra Corporation	
Migent Pocket Modem		Supra Modem 2400	154.
(ext. 300/1200 Baud)	115.	U.S. Robotics	
Novation		Courier 1200 (Hayes Compatible)	199.
Novation Parrot 1200	93.	Courier 2400 (Hayes Compatible)	349.
Prometheus		Courier 2400E (Hayes Compatible)	379.
Promodem 1200 (Hayes Compatible)	239.	Courier HST 9600 (Hayes Compatible)	689.

800/832-3201

Customer Service (203) 378-3662
Monday thru Friday 9 A.M. to 9 P.M.
Saturdays 10 A.M. to 6 P.M. (Eastern Time)

OUR POLICIES

- We accept MASTERCARD and VISA with no added surcharge.
- Your credit card is not charged until we ship.
- If we must ship a partial order the shipment that completes the order is sent freight free.
- If you are ordering by mail, we accept private and company checks. With MASTERCARD and VISA orders include card number and expiration date. Connecticut residents add 7.5% sales tax.
- Locations more than 1 day away shipped via Federal Express Standard Air service.*
- Federal Express Priority 1 service also available.
- Sorry, we cannot accept COD orders.

SHIPPING

- **Continental United States:** Add \$3.00 per order to cover Federal Express Standard Air service.* APO/FPO orders shipped 1st Class Mail (add 3% \$5.00 Min charge). **Alaska, Hawaii and Outside Continental US:** call or write for information.

RETURNS

- Defective software will be replaced immediately by the same item. Defective hardware will be replaced or repaired at our own discretion. Call customer service at (203) 378-3662 to obtain a Return Authorization Number before returning goods for replacement. Products purchased in error subject to a 20% restocking fee.

All items subject to availability. Prices subject to change without notice.

*When your order is shipped from our facility in Stratford, CT, Federal Express Standard Air service will deliver the package in 1 to 2 days. This service does not guarantee next day delivery.

Now Shipping Standard Air Service by



75 Research Drive
Stratford, Connecticut 06497
800/832-3201

ClipArt

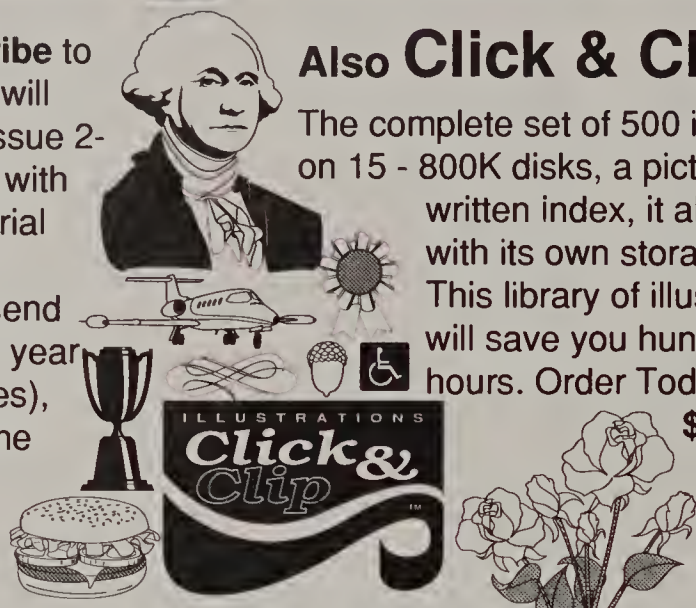
Illustrations

Very High Quality PostScript and EPS files

When You Subscribe to Click & Clip™, you will receive with each issue 2-800K disks packed with illustrations, a pictorial and written index.

To subscribe, just send \$124.50 for one full year (four quarterly issues), or \$39.95 for just one issue.

Order Today!



Also Click & Clip 500

The complete set of 500 illustrations on 15 - 800K disks, a pictorial and written index, it also come with its own storage case. This library of illustrations will save you hundreds of hours. Order Today

\$395

Ordering Hotline 1-800-453-1860 Ext. 641

To Save C.O.D. Charges, send your check or money order, and include your name, complete address, and phone number to: Studio Advertising Art, P.O.Box 18432-52, Las Vegas, NV 89114 For Information or Technical Support, phone 1-702-641-7041. Dealer Inquiries Welcome.

Circle 88 on reader service card

Rendezvous™

version 1.52

A UNIFIED ELECTRONIC APPOINTMENT DIARY

With an Automatic Reminder Feature to remind you of your appointments while working within any Macintosh application.

1988

January	February	March	April
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

1989

January	February	March	April
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

12-month
Year
Calendar

52-week
Year
Planner

1988 Year Planner

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

24-hour
Diary
Page

24-hour Diary Page

Hour	Minute	Second
1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18
19	20	21
22	23	24
25	26	27
28	29	30
31	32	33
34	35	36
37	38	39
40	41	42
43	44	45
46	47	48
49	50	51
52	53	54
55	56	57
58	59	60

Month
Calendar

September 1987

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

At last a full scale software package that can put you in control of your schedule and help you manage your time more effectively. Yes, Rendezvous is a PERSONAL TIME MANAGEMENT TOOL with all the features you need for now and always. You never need to order another refill for your diary or calendar. Complete with executive binder for \$200.

To order call (604) 255-9949

PMC TELESYSTEMS INC., P. O. Box 5127, Vancouver, B.C. V6B 4A9

Circle 68 on reader service card

Steven Levy

son is going to have page numbers in a very strange place.

A more serious problem is the PLP's refusal to make nice with MultiFinder. For some reason, no matter how much memory is free within my computer, the PLP refuses to print within certain applications when MultiFinder is in use. No memory, a dialog box tells me, even when 2MB are just sitting there, ready to take the heat of processing pages. The software writes the file to my hard disk, so I can print it out later with a quirky application called a print manager. Presumably using this application will allow me to print out many files at once, but since the paper tray holds only 150 pages tops, the value is limited. Also, since the PLP takes all the Mac's energy, there is no hope of doing any real work while the printing goes on.

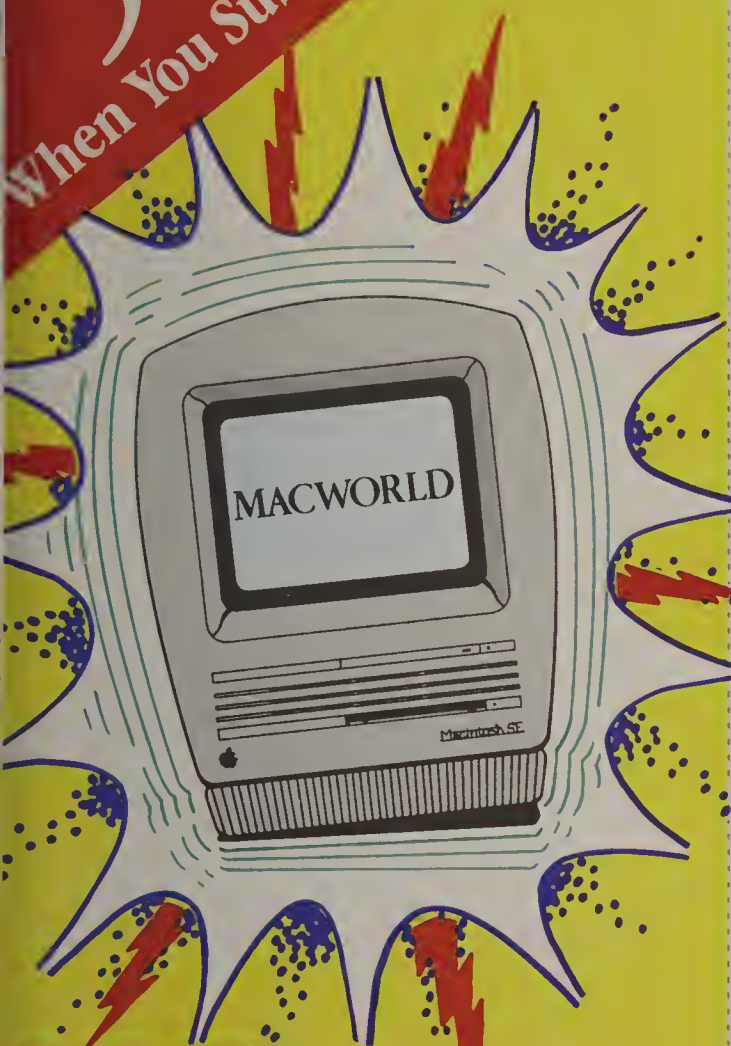
What I wound up doing was this: before I booted my computer I figured out whether or not I needed to print. If not, I disconnected the SCSI cable so I wouldn't have to turn on the printer. If I did have to print, I would hold down the ⌘ key while the Mac booted, to disable the MultiFinder. My, this Toyota Tercel is cramped.

Some of the PLP's problems are mitigated by the new software release. But the MultiFinder problem persists, as do some incompatibilities. And the speed gains do not put the machine in the same parking lot with the high-priced guys.

Yet, with all its problems, I recommend the PLP to those rich enough for a laser printer, but not rich enough for a convenient laser printer. It is no surprise to me that GCC people tell me their customers are satisfied; it is less of a surprise to learn that these happy users have moved up from the ImageWriter, and are as of yet blissfully ignorant of the pleasures of PostScript machines or Apple's low-end laser printer. The Personal LaserPrinter's output is truly fine, and its price can't be beat.

And by the time you read this, users of the GCC printer will be able to pay \$2000 more to get more memory, a faster processor, and PostScript. Of course if they had been willing to spend \$2000 more for a printer in the first place, they would have gotten a LaserWriter or something similar. That's what I would have done. But for ImageWriter users with \$1600 burning a hole in their pockets, it is now possible to step up to a laser printer and breathe the air of computer kings. You might breathe in a little toner too, but believe me, having a laser printer is worth the trouble. □

SAVE MOST 50% Off the Cover Price When You Subscribe Today



UNLEASH The Potential Of Your MAC!

**Discover The Power
Of Macworld At A
Special Savings Rate.**

Applications. Communications.
Power upgrades. Tutorials.
Buying guides. Answers to your
questions. Straight-shooting
reviews. Graphics and more.
All from a user's point-of-view!

More Power! 12 Issues for ~~\$47.40~~

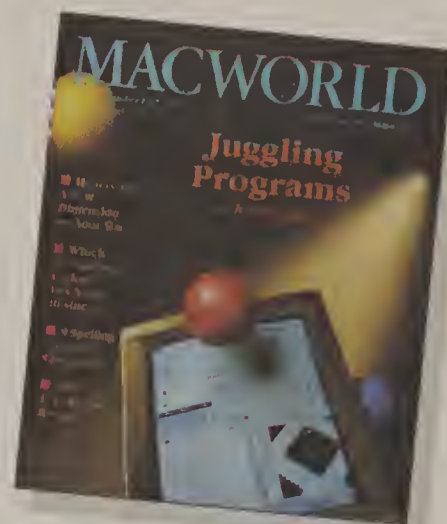
**NOW ONLY
\$24.00**

- ☐ Send me 1 year/12 monthly issues of MACWORLD for \$24. Save 20% off the basic subscription rate.
- ☐ **Save Even More!** 2 years/24 monthly issues for \$37.90.

Please Bill me later.

Name _____
Company _____
Address _____
City State Zip _____

By regular subscription, Macworld is \$30 for 12 issues. The annual cover price is \$47.40 (12 issues). Offer available to subscribers in the U.S. only. Please allow 6-8 weeks for delivery of your first issue.



4BTP4

MACWORLD More Information! 12 Issues for ~~\$47.40~~

**NOW ONLY
\$24.00**

- ☐ Send me 1 year/12 monthly issues of MACWORLD for \$24. Save 20% off the basic subscription rate.
- ☐ **Save Even More!** 2 years/24 monthly issues for \$37.90.

Please Bill me later.

Name _____
Company _____
Address _____
City State Zip _____

By regular subscription, Macworld is \$30 for 12 issues. The annual cover price is \$47.40 (12 issues). Offer available to subscribers in the U.S. only. Please allow 6-8 weeks for delivery of your first issue.



4BTP4

MACWORLD More to Give! 12 Issues for ~~\$47.40~~

**NOW ONLY
\$24.00**

A one-year subscription (12 issues for just \$24) will be sent to the person listed below. Save 20% off the regular subscription rate of \$30 and nearly 50% off the annual newsstand price of \$47.40.

Please Bill me later.

Send Gift to: Name _____
Address _____
City/State/Zip _____

Send Gift from: Name _____
Address _____
City/State/Zip _____

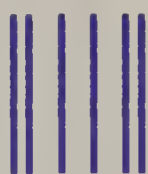
Please allow 6-8 weeks for delivery of your first issue. Offer good in the U.S. only.



2ADF9

MACWORLD

Save Almost
\$24.00
Off the cover price.



POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Subscription Department
P.O. Box 54515
Boulder, CO 80321-4515



Save Almost
\$24.00
Off the cover price.



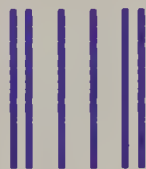
POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Subscription Department
P.O. Box 54515
Boulder, CO 80321-4515



Save Almost
\$24.00
Off the cover price.



POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

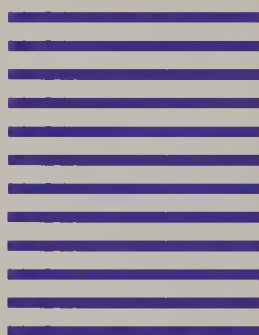
Subscription Department
P.O. Box 54515
Boulder, CO 80321-4515



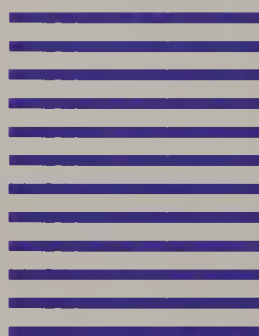
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Save
Nearly
When
You Subscribe Today!

50%

MACWORLD

The magazine that helps you
get the most from your Mac

Macworld is your key to it all. Productivity. Creativity. Whether you want to upgrade software, hardware. . .or learn to use what you have to its fullest potential.

That's what Macworld does—links the Mac's potential to yours.

We look out for your interests. We tell you what's new for the Mac. What it does. Who it's for. Compare similar products—and name names! Discuss pros and cons. Assess value for money for both hardware and software.

We help clarify your options. Is the upgrade worth it? What does this program do that your present software doesn't? Will it work with your printer? If we help you make just one right decision, your subscription is worth it!

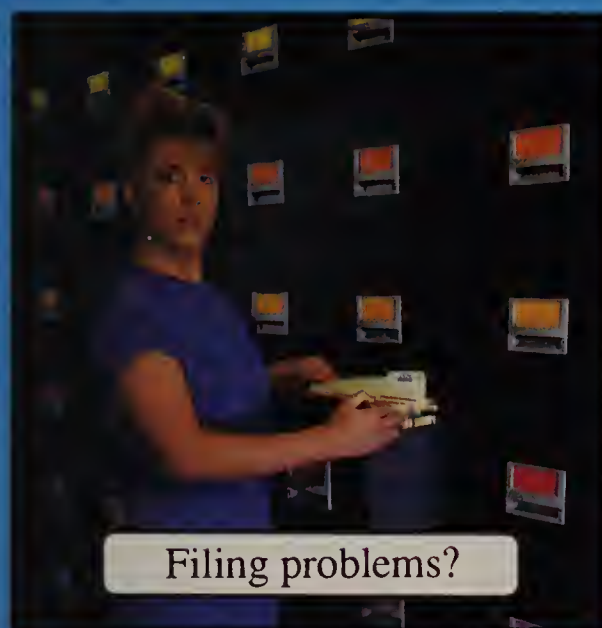
Macworld is more product-driven, more YOU-oriented than ever before. The thing to do now is make the most of your Mac. Macworld is the key.

- Applications
- Power Upgrades
- Buying Guides
- Straight-Shooting Reviews



Mail The
Attached Card
Today!

TimeWand® - Organizing Information



Filing problems?



Scan File



Scan ID Card



Transfer Scan Data



Edit Scan Data

Document Control Report
File Room #5
September 4, 1987

Code	Description	Employee	Date
006168	Jones Account	Pennie Bates	8/31/87
006164	Dawson Account	Pauline Towers	8/31/87
006165	Smith Reference	Pauline Towers	8/31/87
006166	Charlie Account	Pauline Towers	8/31/87
006167	Baker File	Matthew Webster	9/01/87
006173	1987 Research Budget	Matthew Webster	9/01/87
006178	Trowbridge Report	Matthew Webster	9/01/87
006179	Advertising Plan	Barb Misch	9/02/87
006189	Laboratory Results	Barb Misch	9/02/87
006195	Meeting Notes	Barb Misch	9/02/87
006182	Garth Correspondence	Pennie Bates	9/02/87
006183	July Computer Sales	Pennie Bates	9/02/87
006184	Commerce Study	Pennie Bates	9/02/87
006185	Teller Audit	Matthew Webster	9/03/87
006186	Product Specification	Matthew Webster	9/03/87
006188			9/03/87

Develop Data Reports

Applications for the TimeWand - Document Control

Ever wonder who has that important file on the Jones account? There is no record of who took it from the file room and no one remembers who had it last. You spend your valuable time and patience tracking it down, but when you finally locate the file, it may be too late for timely use.

Make it easy on yourself by tracking documents with the TimeWand. By simply scanning the bar code on the Jones file and your employee ID number (or department name), the TimeWand records who has the file *and* the time it was taken.

The TimeWand is simple to operate, yet provides the data necessary to create detailed reports. Generate reports by incorporating data collected with the TimeWand into your data base. The reports allow you to quickly find who has those important files, check a file's current activity, identify which items are 'slow movers', or show the amount of traffic the file room handles each day.

No manual data entry or deciphering of your co-worker's handwritten notes is required. All TimeWand entries are made by scanning bar codes! It's fast, easy, and, most importantly, organized.

TimeWand. It helps you keep up with the Joneses.

TimeWand (2K version) - \$198

Single Recharger and Cable - \$149

TimeWand Manager Software (Macintosh) - \$489

TimeWand Communication Software (IBM) - \$299



1105 N.E. Circle Blvd., Corvallis, OR 97330-4285
503-758-0521

See us at Gov't. Tech. Conference
Sacramento, CA May 18-20

Videx and TimeWand are registered trademarks of Videx, Inc.

Circle 144 on reader service card



UNPRECEDENTED

**THE
FIVE
YEAR
WARRANTY**

The five year limited warranty is available on hard disk drives only manufactured by Microtech International, Inc. and must be sold and delivered in the United States or Canada. Prices and specifications are subject to change without notice.

NOVA AND MICRO MAC are trademarks of Microtech International, Inc. - Macintosh Plus, SE and II are trademarks of Apple Computer, Inc.

FREE SIMM OFFER
To qualified Dealers
Ask for details



**EXTERNAL HARD DISK DRIVE SERIES
FOR MACINTOSH PLUS, SE, AND II**

20 MEGABYTES TO 120 MEGABYTES



**INTERNAL HARD DISK DRIVE SERIES
FOR MACINTOSH SE AND II**

30 MEGABYTES TO 90 MEGABYTES



THE INDUSTRY'S BEST KEPT SECRET

Call for your nearest Microtech dealer: 800-626-4276

 **Microtech International, Inc.** 29 Business Park Drive/Branford, Connecticut USA 06405/(203) 488-7744

Distributed in Asia exclusively by: ADO ELECTRONIC INDUSTRIAL CO.
APPLE DIVISION, 4-7-3 Tanaka Building, Sotokanda, Chiyodaku, Tokyo 03-257-2663

Circle 62 on reader service card

Macintosh Today

has what you want. Timeliness. Side-by-side product comparisons. Trends and new technologies. Profiles of Macintosh users. Useful tips. Industry news and inside information.

When you read *Macintosh Today*, you know what's going on in the Mac marketplace. We have the most experienced editors ever assembled to produce a Macintosh publication. We know what we're writing about.

Macintosh Today was created on the Macintosh for the Macintosh. Its clear design and high quality make it easy to read for busy Macintosh users.

Best of all *Macintosh Today* is FREE to qualified volume Macintosh business and technical users. To qualify, fill out the qualification card and return it promptly.

If you wish to receive extra reader qualification cards, call 800. 351. 1700.

Macintosh Today

Best then.

Best now.



Send in your qualification card today!

MacintoshToday

Macintosh Today Qualified Subscription Card

Note: A free subscription to *Macintosh Today* will be sent to those applicants in the U.S. and Canada who qualify. The publisher reserves the right to limit the number of free subscriptions. Please answer all questions completely. Incomplete forms will not be processed. For questions requesting quantities, use specific numbers. Please sign and date this form.

Please accept my request for a free subscription to *Macintosh Today*. ☐ Yes ☐ No

Signature _____
Title _____

Please provide your business address below or affix your business card.

NAME	
TITLE	
COMPANY/DIVISION	
MAIL STOP	BUSINESS TELEPHONE
STREET	
CITY/STATE/ZIP	

Old Address: _____

☐ New Subscription Request ☐ Free Renewal ☐ Address Change (please provide old and new address)

1. Industry (check only one)
- Noncomputer-related businesses**
- ☐ 1. Aerospace
 - ☐ 2. Agriculture, mining, construction, oil
 - ☐ 3. Business consulting (noncomputer-related)
 - ☐ 4. College/university
 - ☐ 5. Elementary/high school
 - ☐ 6. Engineering/architecture
 - ☐ 7. Finance, banking, accounting, insurance, real estate
 - ☐ 8. Government
 - ☐ 9. Health/medical services
 - ☐ 10. Legal services
 - ☐ 11. Manufacturing
 - ☐ 12. Military
 - ☐ 13. Other business services
 - ☐ 14. Publishing/advertising/public relations
 - ☐ 15. Research and development
 - ☐ 16. Retail/wholesale
 - ☐ 17. Transportation, communications, utilities
 - ☐ 98. Other (specify) _____

- Computer-related businesses**
- ☐ 18. Computer consultant
 - ☐ 19. Computer retail
 - ☐ 20. Distributor/wholesaler
 - ☐ 21. Manufacturer (computers, software, peripherals)
 - ☐ 22. Service bureau
 - ☐ 23. VAR/systems house/integrator
 - ☐ 99. Other (specify) _____

2. Title (check only one)
- ☐ A. Chairman/president/owner/partner
 - ☐ B. Vice president
 - ☐ C. Controller/treasurer/accountant
 - ☐ D. Director/supervisor/manager
 - ☐ E. Project manager/chief/group leader
 - ☐ F. Art director/writer/chief/group leader
 - ☐ G. Engineer/scientist
 - ☐ H. Administrator
 - ☐ I. Consultant/advisor
 - ☐ J. Microcomputer specialist/manager/analyst
 - ☐ K. Programmer
 - ☐ L. Educator
 - ☐ M. Professional (lawyer, doctor, etc.)
 - ☐ Z. Other (specify) _____

3. Department or function (check only one)
- ☐ A. Accounting/finance
 - ☐ B. Administration/management/personnel
 - ☐ C. Consulting
 - ☐ D. Education/training
 - ☐ E. Engineering/R&D
 - ☐ F. Manufacturing/production
 - ☐ G. Microcomputer center/office automation
 - ☐ H. MIS/DP
 - ☐ I. Purchasing
 - ☐ J. Sales/marketing/distribution
 - ☐ Z. Other (specify) _____

- 4a. Does your company own or lease any mainframe computers at this location?
- ☐ Yes (indicate quantity below) ☐ No
- | | Existing (quantity) | Plan to buy (quantity) |
|--|---------------------|------------------------|
| <input type="checkbox"/> 1. IBM | _____ | _____ |
| <input type="checkbox"/> 99. Other (specify) _____ | _____ | _____ |

- 4b. Does your company own or lease any mini-computers at this location?
- ☐ Yes (indicate quantity below) ☐ No
- | | Existing (quantity) | Plan to buy (quantity) |
|--|---------------------|------------------------|
| <input type="checkbox"/> 1. IBM | _____ | _____ |
| <input type="checkbox"/> 2. DEC VAX | _____ | _____ |
| <input type="checkbox"/> 3. Sun/Apollo | _____ | _____ |
| <input type="checkbox"/> 99. Other (specify) _____ | _____ | _____ |

5. Does your firm have or plan to buy any of the following types of personal computers or microcomputer systems at your location?
- ☐ Yes (indicate quantity below) ☐ No
- | | Currently own | Plan to buy within 1-12 mos. |
|---------------------------|---------------|------------------------------|
| 1. Macintosh 128/512 | _____ | _____ |
| 2. Macintosh Plus | _____ | _____ |
| 3. Macintosh SE | _____ | _____ |
| 4. Macintosh II | _____ | _____ |
| 5. IBM or compatible | _____ | _____ |
| 6. Sun/Apollo workstation | _____ | _____ |
| 99. Other (specify) _____ | _____ | _____ |

6. Please indicate your involvement with each of the following types of personal computers or microcomputer systems (check all that apply)
- | | Macintosh | Software | Networks & Peripherals |
|---|-----------|----------|------------------------|
| A. Approve purchase | A. _____ | A. _____ | A. _____ |
| B. Develop/manufacture | B. _____ | B. _____ | B. _____ |
| C. Evaluate/select vendor | C. _____ | C. _____ | C. _____ |
| D. Own one | D. _____ | D. _____ | D. _____ |
| E. Own two or more | E. _____ | E. _____ | E. _____ |
| F. Purchase or acquire | F. _____ | F. _____ | F. _____ |
| G. Establish specifications | G. _____ | G. _____ | G. _____ |
| H. Recommend to others | H. _____ | H. _____ | H. _____ |
| I. Sell | I. _____ | I. _____ | I. _____ |
| J. Train people to use/ or provide support | J. _____ | J. _____ | J. _____ |
| K. Use | K. _____ | K. _____ | K. _____ |
| L. No involvement | L. _____ | L. _____ | L. _____ |
| Z. Other (specify by name and quantity) _____ | Z. _____ | Z. _____ | Z. _____ |
- If you have no involvement with any of the above, skip to question 8.

7. Do you recommend, buy, specify or approve microcomputers, software, and/or peripherals?
- ☐ Yes ☐ No
- If yes, please indicate for how many Macintosh personal computers you have this involvement. (check only one)
- | | |
|-----------------------------------|---|
| <input type="checkbox"/> A. 1-3 | <input type="checkbox"/> E. 50-99 |
| <input type="checkbox"/> B. 4-9 | <input type="checkbox"/> F. 100-499 |
| <input type="checkbox"/> C. 10-19 | <input type="checkbox"/> G. 500+ |
| <input type="checkbox"/> D. 20-49 | <input type="checkbox"/> H. None of the above |
8. How many people are employed by your entire company? (check only one)
- | | | |
|-----------------------------------|---------------------------------------|--|
| <input type="checkbox"/> A. 1-9 | <input type="checkbox"/> D. 100-499 | <input type="checkbox"/> G. 2500-4999 |
| <input type="checkbox"/> B. 10-24 | <input type="checkbox"/> E. 500-999 | <input type="checkbox"/> H. 5000-9999 |
| <input type="checkbox"/> C. 25-99 | <input type="checkbox"/> F. 1000-2499 | <input type="checkbox"/> I. 10,000 or more |

MacintoshToday

15. Please list below any individuals at this location who also help to recommend, specify, acquire or approve the purchase of computer systems, peripherals, software or services to whom you would like us to send a complimentary subscription of Macintosh Today.

Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____

Please fold, tape and mail.
PLEASE DO NOT STAPLE.

_____ Name
_____ Company
_____ Address
_____ City/State/ Zip

AFFIX
POSTAGE
HERE

MacintoshToday
Subscription Department
P.O. Box 5456
Pasadena, CA 91107-0456

Not
everyone
needs
Microsoft
Excel.

[illegible]

The screenshot shows a Macintosh window titled "Engine size vs mileage". Inside the window is a scatter plot with the title "Engine Size vs. Mileage". The x-axis is labeled "Engine Size (cc)" and has major tick marks at 1000 and 10000. The y-axis is labeled "Miles per gallon" and has major tick marks at 10 and 100. The plot area has a grid. There are approximately 20 data points plotted, showing a general downward trend. The points are more densely packed between 1000 and 5000 cc on the x-axis and between 10 and 50 mpg on the y-axis.

File	Edit	Formula	Format	Data	Options	Macro	Window																																																																																																																																																																																																																																																																				
Alt	Instructions																																																																																																																																																																																																																																																																										
<table border="1"> <thead> <tr> <th colspan="8">Travel Expense Weekly</th> </tr> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> <th>H</th> </tr> </thead> <tbody> <tr> <td>7</td> <td colspan="8">Key Data Input Section</td> </tr> <tr> <td>8</td> <td>Organization</td> <td colspan="7">Generic Data Systems, Inc</td> </tr> <tr> <td>9</td> <td>Start Day of Travel</td> <td colspan="7">4/13/86</td> </tr> <tr> <td>10</td> <td>Miles to Mileage</td> <td colspan="7">20.00</td> </tr> <tr> <td>11</td> <td colspan="8"></td> </tr> <tr> <td>12</td> <td colspan="8"></td> </tr> <tr> <td>13</td> <td colspan="8"></td> </tr> <tr> <td>14</td> <td colspan="8">Generic Data Systems, Inc Travel Expense Report</td> </tr> <tr> <td>15</td> <td>Name</td> <td colspan="7">Thomas Buchanan</td> </tr> <tr> <td>16</td> <td>Address</td> <td colspan="7">123 Main Street, Walnut Creek, CA 94511</td> </tr> <tr> <td>17</td> <td>Department</td> <td colspan="7">Marketing</td> </tr> <tr> <td>18</td> <td>Mail Check To</td> <td colspan="7">Above</td> </tr> <tr> <td>19</td> <td colspan="8">Attach Receipts Required by Company Policy</td> </tr> <tr> <td>20</td> <td>Date</td> <td>4/13/86</td> <td>4/14/86</td> <td>4/15/86</td> <td>4/16/86</td> <td>4/17/86</td> <td>4/18/86</td> <td>4/19/86</td> </tr> <tr> <td>21</td> <td>Day</td> <td>Sunday</td> <td>Monday</td> <td>Tuesday</td> <td>Wednesday</td> <td>Thursday</td> <td>Friday</td> <td>Saturday</td> </tr> <tr> <td>22</td> <td>Travel from</td> <td>Horns</td> <td>Seattle</td> <td>Portland</td> <td>Portland</td> <td>Oakland</td> <td>Home</td> <td></td> </tr> <tr> <td>23</td> <td>To</td> <td>Seattle</td> <td>Portland</td> <td>Portland</td> <td>Portland</td> <td>Oakland</td> <td>Home</td> <td></td> </tr> <tr> <td>24</td> <td>To</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>25</td> <td>To</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>26</td> <td>Personal Mileage</td> <td>25</td> <td></td> <td></td> <td></td> <td>25</td> <td></td> <td></td> </tr> <tr> <td>27</td> <td>Personal Car</td> <td>5.00</td> <td></td> <td></td> <td></td> <td>5.00</td> <td></td> <td></td> </tr> <tr> <td>28</td> <td>Airfare</td> <td></td> <td></td> <td>68.00</td> <td></td> <td>53.00</td> <td></td> <td></td> </tr> <tr> <td>29</td> <td>Rental Car</td> <td></td> <td></td> <td></td> <td></td> <td>71.15</td> <td></td> <td></td> </tr> <tr> <td>30</td> <td>Buss/Mile/Taxi</td> <td>10.00</td> <td>6.00</td> <td>10.00</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>31</td> <td>Parking</td> <td></td> <td></td> <td></td> <td></td> <td>20.00</td> <td></td> <td></td> </tr> <tr> <td>32</td> <td>Lodging</td> <td>74.67</td> <td>74.67</td> <td>68.13</td> <td>68.13</td> <td></td> <td></td> <td></td> </tr> <tr> <td>33</td> <td>Breakfast</td> <td></td> <td>5.00</td> <td>4.00</td> <td>5.00</td> <td>3.00</td> <td></td> <td></td> </tr> </tbody> </table>								Travel Expense Weekly									A	B	C	D	E	F	G	H	7	Key Data Input Section								8	Organization	Generic Data Systems, Inc							9	Start Day of Travel	4/13/86							10	Miles to Mileage	20.00							11									12									13									14	Generic Data Systems, Inc Travel Expense Report								15	Name	Thomas Buchanan							16	Address	123 Main Street, Walnut Creek, CA 94511							17	Department	Marketing							18	Mail Check To	Above							19	Attach Receipts Required by Company Policy								20	Date	4/13/86	4/14/86	4/15/86	4/16/86	4/17/86	4/18/86	4/19/86	21	Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	22	Travel from	Horns	Seattle	Portland	Portland	Oakland	Home		23	To	Seattle	Portland	Portland	Portland	Oakland	Home		24	To								25	To								26	Personal Mileage	25				25			27	Personal Car	5.00				5.00			28	Airfare			68.00		53.00			29	Rental Car					71.15			30	Buss/Mile/Taxi	10.00	6.00	10.00					31	Parking					20.00			32	Lodging	74.67	74.67	68.13	68.13				33	Breakfast		5.00	4.00	5.00	3.00		
Travel Expense Weekly																																																																																																																																																																																																																																																																											
	A	B	C	D	E	F	G	H																																																																																																																																																																																																																																																																			
7	Key Data Input Section																																																																																																																																																																																																																																																																										
8	Organization	Generic Data Systems, Inc																																																																																																																																																																																																																																																																									
9	Start Day of Travel	4/13/86																																																																																																																																																																																																																																																																									
10	Miles to Mileage	20.00																																																																																																																																																																																																																																																																									
11																																																																																																																																																																																																																																																																											
12																																																																																																																																																																																																																																																																											
13																																																																																																																																																																																																																																																																											
14	Generic Data Systems, Inc Travel Expense Report																																																																																																																																																																																																																																																																										
15	Name	Thomas Buchanan																																																																																																																																																																																																																																																																									
16	Address	123 Main Street, Walnut Creek, CA 94511																																																																																																																																																																																																																																																																									
17	Department	Marketing																																																																																																																																																																																																																																																																									
18	Mail Check To	Above																																																																																																																																																																																																																																																																									
19	Attach Receipts Required by Company Policy																																																																																																																																																																																																																																																																										
20	Date	4/13/86	4/14/86	4/15/86	4/16/86	4/17/86	4/18/86	4/19/86																																																																																																																																																																																																																																																																			
21	Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																																																																																																																																																																																																			
22	Travel from	Horns	Seattle	Portland	Portland	Oakland	Home																																																																																																																																																																																																																																																																				
23	To	Seattle	Portland	Portland	Portland	Oakland	Home																																																																																																																																																																																																																																																																				
24	To																																																																																																																																																																																																																																																																										
25	To																																																																																																																																																																																																																																																																										
26	Personal Mileage	25				25																																																																																																																																																																																																																																																																					
27	Personal Car	5.00				5.00																																																																																																																																																																																																																																																																					
28	Airfare			68.00		53.00																																																																																																																																																																																																																																																																					
29	Rental Car					71.15																																																																																																																																																																																																																																																																					
30	Buss/Mile/Taxi	10.00	6.00	10.00																																																																																																																																																																																																																																																																							
31	Parking					20.00																																																																																																																																																																																																																																																																					
32	Lodging	74.67	74.67	68.13	68.13																																																																																																																																																																																																																																																																						
33	Breakfast		5.00	4.00	5.00	3.00																																																																																																																																																																																																																																																																					

File Edit Format Data Options Macro Window

A10 Aging

Accounts Receivable data

A B C D E F G

1
2
3
4
5
6

Siegl, Rehrmann & Brown
Accounts Receivable

Today's Date 30-Nov-87
Average Past Due 89

Invoice Number	Invoice Date	Invoice No.	Company	Date Due	Total Due	Payment 1
11521	2-Jul-87	20	Morel & Co	3-Aug-87	\$128.69	
11527	13-Jul-87	85	Wolfgang's Auto Repair	12-Aug-87	\$373.43	
11530	17-Jul-87	12	Ferguson's & Bardell	17-Aug-87	\$342.40	
					\$1,317.46	
					\$9,954.85	
					\$141.33	\$9,000.00

Define Name

Add Invoice

Aging

Cleanup

new.record

Payment.Entry

Report.By.Ca

Name:

Aging

Refers to:

-\$6318

OK

Cancel

Delete

Macro

☐ Function ☒ Command ☐ Option-* Key: g

AR MACROS

Payment Entry
Command + Option + p

Cleanup
Command + Option + c

Aging
Command + Option + g

Report.By.Co

File Edit Formula Format Data Options Macro Window			
AI		Label Setup	
<p align="center">CUSTOMER DATABASE Siegl, Rehrmann & Brown Specialty Hardware</p>			
Mailing labels		Address	City State ZIP
P.M. Curtis & Sons 88 Virginia Street, Suite 209 Seattle, WA 2145	512 Second St 88 Virginia Street, Suite 209 919 Westlawn, #2213 P.O. Box 11561 1841 Westlake N 215 Elm St	Seattle WA 98121 Boston MA 02145 Madison WI 53716 Kent CT 07501 Seattle WA 98101 Spokane WA 99812	
Wollgang's Auto Repair 1919 Western, #2213 Madison, WI 53716	Medical Dental Bldg, Suite 5015 1540 W 155th Place R4045 S 180th 8710 19th Avenue N.W. 511 Third Avenue 771 Carroll Street 8701 Sixth Ave S	Washington DC 20002 Des Moines IA 50311 Portland OR 97232 Portland OR 97221 New York NY 10012 San Francisco CA 94115 Atlanta GA 30315	
DIX-O-TEX Products P.O. Box 11561 Kent, CT 07570			
Pioneer Manufacturing 1841 Westlake N Seattle, WA 98101			
<input type="checkbox"/> Mailing Labels Macro			
Thiebaut & Nichols 215 Elm St Spokane, WA 99212	1 Label Setup 2 Offset for mailing label position 3 =ECHO(FALSE) 4 =SET NAME("label area", INPUT) 5 =if (label area = FALSE, return) 6 =SET NAME("DataSheet", INDEX 7 =INDEX(1) 8 =SET NAME("Label Sheet", INDEX 9 =ROWS(label area, INPUT) 10 =SET VALUE(A21, 1)	B Names bottom cell of the selection Names bottom cell of the selection Combines City, State, & Zip in one Copies and Pastes values only to blank column Selects columns of city, state & zip	<input type="checkbox"/>
Shiksha Healthcare Medical Dental Bldg., Suite 5015 Washington, DC 20002			
Redford & Company			

The screenshot shows a Macintosh window titled "Sales Trend" containing a line graph titled "12-month Sales Trend for 1987". The graph displays sales data for each month of 1987. The vertical axis (Y-axis) is labeled "Sales in millions of dollars" and ranges from \$0 to \$900 in increments of \$100. The horizontal axis (X-axis) lists the months from Jan to Dec. The sales line starts at approximately \$400 million in January, rises to a peak of about \$780 million in May, drops to a low of about \$280 million in July, and then rises again to about \$880 million in December. Three text annotations are present: "Now slowdown in the summer months" with a line pointing to the dip in July; "Overseas" with a line pointing to the July dip; and "Domestic" with a line pointing to the June dip.

Month	Sales (millions of dollars)
Jan	400
Feb	500
Mar	600
Apr	700
May	780
Jun	600
Jul	280
Aug	350
Sep	450
Oct	550
Nov	700
Dec	880

The screenshot shows a software window titled "File Edit Gallery Chart Format Macro Window". Inside the window, a chart titled "Three month price-volume history" is displayed. The chart has two y-axes: "Volume (00)" on the left, ranging from 0 to 15,000 in increments of 1,500; and "Share Price" on the right, ranging from \$25.00 to \$55.00 in increments of \$3.00. The x-axis represents time, with labels for Oct 1, Oct 15, Oct 29, Nov 12, Nov 26, Dec 11, and Dec 26. The price is represented by a line with vertical error bars (OHLC-style), showing an overall upward trend from approximately \$30.00 in early October to a peak of about \$52.00 in late November, followed by a slight decline and then a recovery. The volume is represented by vertical bars at the base of the chart, indicating daily trading volume. There are several peaks in volume, with the largest one occurring around November 12, reaching nearly 6,000 units.

File Edit Formula Format Data Options Macro Window
642

Payroll

PAYROLL FOR THE WEEK ENDING JAN 15TH

Team Member	Base Pay (hourly)	Regular Hours	Total Earnings	FICA	Federal Income Tax	Total Deductions
Anders, Melvin	\$6 50	40	\$260 00	\$18 50	\$52 00	\$70 50
Alvarado, Chad	\$13 00	40	\$520 00	\$41 22	\$114 40	\$155 62
Beach, Cindy	\$14 00	40	\$560 00	\$44 14	\$134 40	\$178 54
David, Ira	\$25 00	20	\$500 00	\$38 90	\$95 00	\$133 90
Green, Shawn	\$27 75	40	\$1,110 00	\$76 32	\$555 00	\$631 32

Totals

Hours Worked 445 00

Earnings \$6,302 50

FICA \$462 85

Fed Inc. Tax Deduct \$1,887 15

Net Pay \$3,952 50

File Edit Gallery Chart Format Macro Window

Perform us Forecast

Performance vs. Forecast

Unit sales

Forecast

Shipments

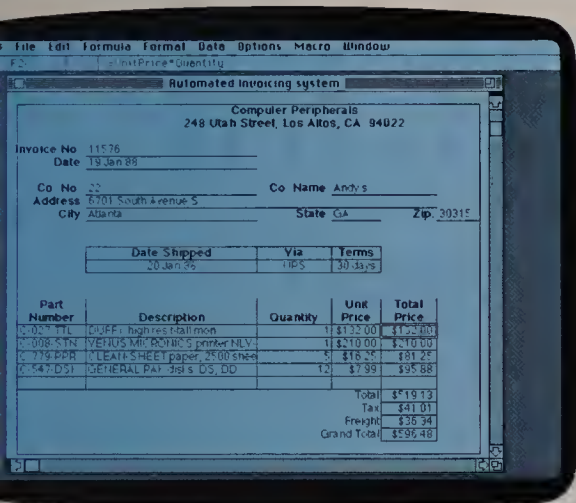
Trend

Increase due to holiday rush

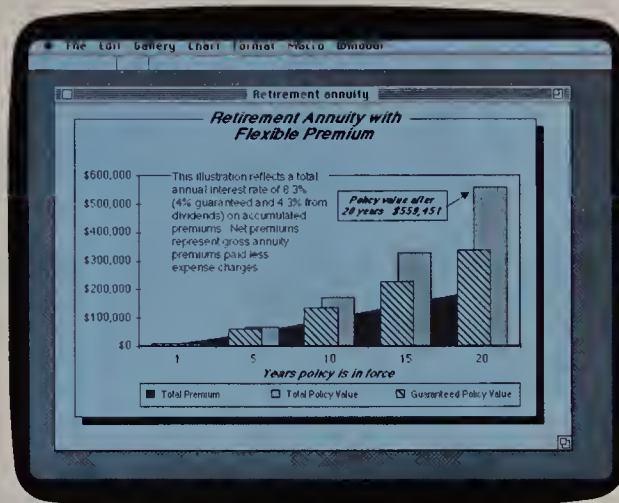
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Forecast	2000	2200	2475	2650	2800	2900	3000	3100	3200	3300	3400	3500
Shipments	2000	2200	2475	2650	2800	2900	3000	3100	3200	3300	3400	4500
Trend	1711	2170	2580	2967	3350	3733	4117	4500	4883	5267	5650	6033

No matter what you do, call for a free brochure. (800) 541-1261, Dept. E33.

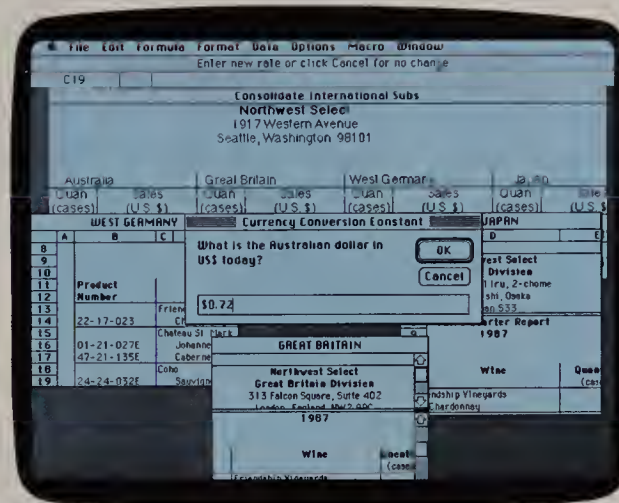
do things like this.



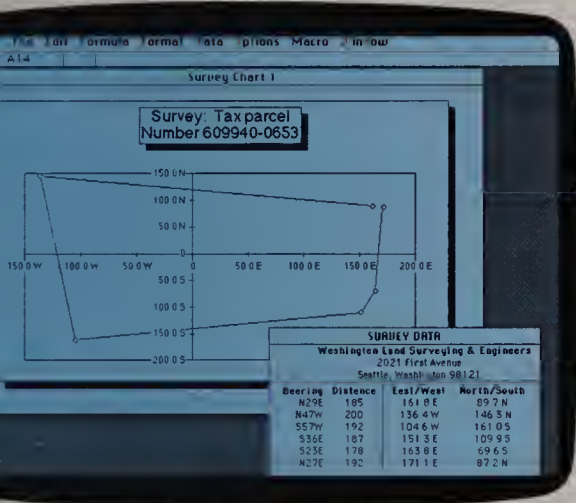
Generate invoices.



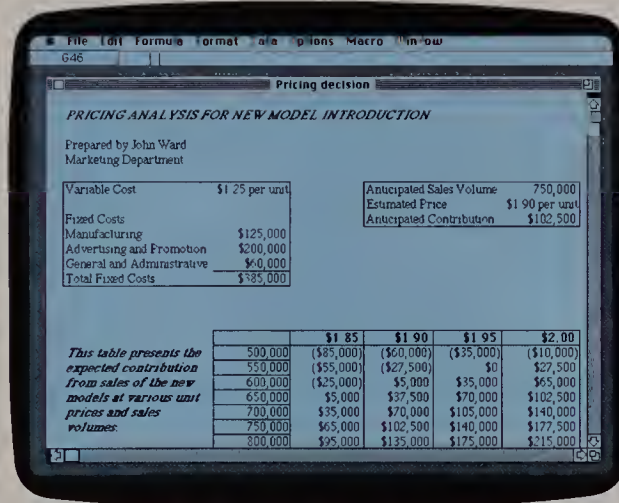
Sell insurance.



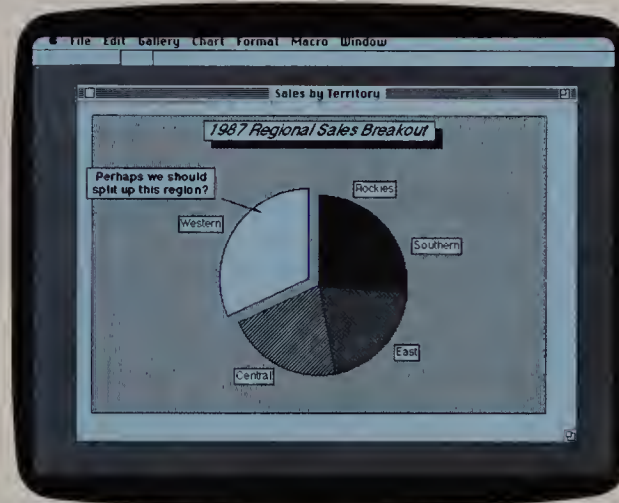
Consolidate international reports.



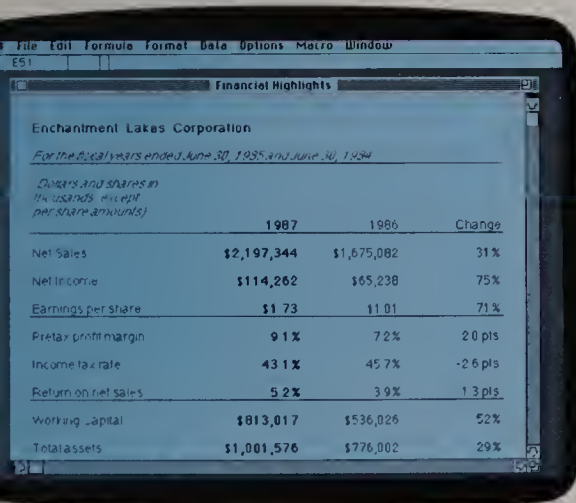
Survey land.



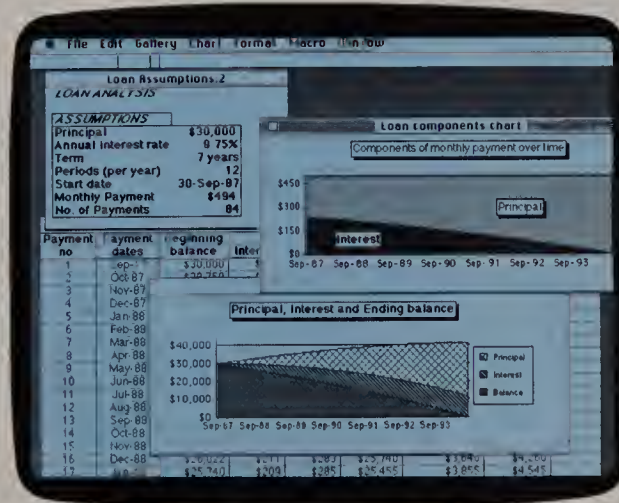
Make pricing decisions.



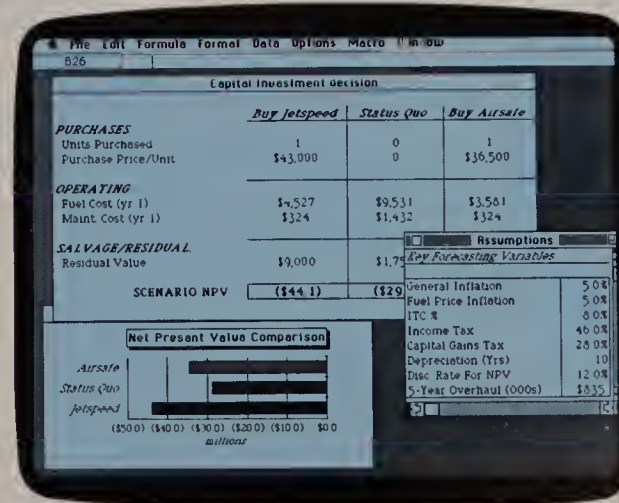
Manage sales territories.



Prepare financial reports.



Perform loan analyses.



Buy capital equipment.

Microsoft® Excel

Microsoft is a registered trademark of Microsoft Corporation.



We were ready for the Mac II almost before they were.

INTRODUCING THE NS8/16 MEMORY EXPANSION BOARD FOR THE MACINTOSH II

National has been providing high-level add-in products for over a decade. We've helped well over a hundred thousand multi-tasking, multi-user business environments run faster and better. So even before Apple was ready with the new Mac™ II, we were ready with the expertise and technology to help it work harder.

In fact, we viewed the Macintosh™ II as an 'open' invitation to provide power users with the right tools. And now we're proud to introduce the NS8/16 Memory Expansion Board.

GET 4, 8, 12, OR 16 MBYTES OF RAM FEATURING:

- Apple/UNIX® (A/UX) compatibility.
- RAMdisk software.
- Advanced NuBus™ support.

Speed through memory hungry applications like: CAD/CAM. Desktop Publishing. High Resolution Graphics. Big

Macintosh and Mac are trademarks of Apple Computer, Inc.
UNIX is a registered trademark of AT&T Bell Labs.
NuBus is a trademark of Texas Instruments Incorporated.
© 1987 National Semiconductor Corp.



Databases and Spreadsheets. Financial/Accounting packages. And AI Programming. Just to name a few.

AND RUN A/UX MORE EFFICIENTLY

High-end applications will run at top performance levels under A/UX. Without modifications. And the NS8/16 remains completely transparent to the user.

In the Macintosh II operating system, the RAMdisk utility allows an application to treat the NS8/16 as one, or a series, of pseudo disk drives, accessing files at NuBus memory speeds.

So memory intensive applications will go much faster. As will switching between applications.

ALL WITH QUALITY AND SUPPORT YOU CAN RELY ON

Get a full 5-year warranty on the NS8/16. Backed by the leader in memory products. And customer service.

National is the company you should think of for add-in products. Now, with our NS8/16 Memory Expansion Board. And in the future — you can expect to see a whole line of add-in products for the Mac II.

It's experience that lets us make a promise like that. So now that you have the Mac II ready to run, you know who can help you see how far it can go.

**FOR MORE INFORMATION
CALL THE COMPATIBLE
PRODUCTS GROUP AT
800-345-4006
OUTSIDE OF CALIFORNIA
CALL 800-538-8510**

Verbatim

An interview with Cricket Software chairman Jim Rafferty



Jim Rafferty is chairman and cofounder of Cricket Software. His company, based in Malvern, Pennsylvania, has become one of the leading suppliers of graphics software for the Macintosh, including Cricket Draw and Cricket Graph. He and Darragh Muldoon founded the firm only two years ago, and they now predict over \$20 million in annual sales for 1988.

How did you start Cricket Software?

I had become interested in personal computers while in graduate school. In the fall of 1983, I read about this new computer from Apple, the Macintosh. I determined that if I was ever to get into computers, this was the time. I pirated a copy of *Inside Macintosh* and tried to read it. I was in tears, it was so poorly written.

That experience made me realize that everyone would be starting from the ground up in Mac programming, so I had a chance equal to any other developer.

Then on January 24, 1984, when the Mac was released, I was in line before my local Apple dealer opened, waiting with a check for \$2498 in my hand. I couldn't afford a disk drive or an ImageWriter. I familiarized myself with the user interface, and I was convinced that it was the best personal computer ever built.

What was your idea for the company?

I'd been thinking about how horribly clumsy mainframe graphics programs for data analysis were. So I started with a graphics product that became Stat Works. It took one year and three months to do in Lisa Pascal; the learning curve for Mac programming is horrendous.

Microsoft and Forethought declined to publish Stat Works, and we eventually contracted with an English company, Heyden & Son (not the American Hayden), to publish it.

What about the name of the company?

Cricket? That had been my nickname as a kid. I tried it on Darragh and she liked it. We knew that establishing the name would be a hump to get over. But we knew Cricket would stick.

Guy Kawasaki wrote me a letter after he had seen our product, saying that it was great but we would have to change our name. I wrote him back and said that was a strange recommendation coming from someone at a company named Apple.

How big is Cricket today?

We've moved into a new 30,000-square-foot facility with 60 people. In late 1987 we had our first million-dollar month.

What's next?

Pict-O-Graph has just been shipped. We've heard from many people that it is a real sleeper product for business graphics. In 1988 we'll have Cricket Presents, Cricket Device Drivers, and a black-and-white paint package.

Why another paint package?

This one will have a lot of creative features that make it easier to use than the others: better user modification of the air brush, polygon drawing tools, and a polygon drawing and manipulation feature that we call "spirograph." It's very fast in scrolling. It reads TIFF, PICT, and Paint files. It can also read scanned images, but not gray-scale images.

The bulk of installed scanners are only bilevel—that is, they don't use gray-scale information. The new 8-bit devices are only for the Mac II, whereas our program will be for the majority of users. It will also read files from the other products in our line: Cricket Draw, Cricket Graph, et cetera.

(continues)



Creating drivers that work with all applications is tough. That's why we develop them only for our products.

How will it compare to SuperPaint?

It has a feature I call "wet paint" that allows an element of the image be treated as an object while you work with it. Afterwards it becomes part of the bitmap. That way we provide object-oriented editing and bitmap editing without confusing the user with two layers in the program. We have other products planned for the third quarter, but I can't talk about them this far in advance, as I could in the old days. The market is more competitive now.

About the device drivers: what is a driver?

A driver offers a way to take a screen image to hard copy, whether it's to film in a cam-

era, to transparency, or to paper. The Cricket Device Drivers family will be selectable from the Chooser. They'll drive color ink-jet, color thermal, and black-and-white laser printers, and film recorders. The package will include drivers for systems that service bureaus use to produce slides via modems.

SoftStyle, one of the other companies that writes printer-driver programs for the Macintosh, has recently been acquired by Phoenix, the company that developed IBM PC BIOS clone firmware. Any conjecture about what they have planned?

SoftStyle may be planning a full line of drivers, as we are, but we feel that our expertise and experience in graphics gives us a definite edge.

Creating drivers that work with all applications is tough. The classic case is Microsoft, which does not do printer-management according to Apple rules. Developers must find ways they can fudge these problems. That's why we develop drivers only for our own products.

Printer-driver development has been a chronic problem for IBM users. Are similar problems developing for Mac users?

Yes. We're spending more time serving printer markets. The driver business is funky. Maybe I write one and sell it for \$100. If it doesn't work, I get calls daily. But nine out of ten calls about printer drivers are actually due to improper cables that dealers sold to people. After several calls like that, there is little profit in writing a driver. The printer company makes one or two thousand dollars on each sale, but there is no margin for those of us who write the software to make the printers

(continues)

1-800-MAC-DISK



Software

Business Sense	283.00
Canvas	119.00
Cricket Graph	119.00
Crystal Quest	29.00
Disk Express	25.00
Falcon	35.00
Focal Point	66.00
Freehand by Aldus	365.00
Hardball	29.00
Lightspeed C	125.00
MacGolf	36.00
Mac In Tax	65.00
MacMoney 3.0	59.00
MacLink Plus	142.00
Microsoft Products	call
MiniCAD 3.16	379.00
PageMaker 2.0	349.00
Pictograph	109.00
Pixel Paint	265.00
ReadySetGo 4.0	359.00
Red Ryder	59.00
Reflex Plus	169.00
Stepping Out	62.00
Suitcase	39.00
SuperLaserSpool	98.00
Turbo Pascal	59.00
Video Works II	119.00
Word Perfect	189.00

Hardware

Hard Disk Drives by Everex,		
MacBottom, Magic, Relax		
Rodime and CMS:		
	Internal	External
	20meg	399.00 499.00
	30meg	699.00 699.00
	40meg	749.00 799.00
	60meg	849.00 899.00
	91meg	1295.00 1395.00
	150meg	NA 1950.00
	300meg	NA 2500.00
	60MB Tape Backup	699.00
	Cannon Scanner	1295.00
	Thunderscan 4.0	195.00
	System Saver	75.00
MacFan		69.00
	Turbo Mouse (+, SE)	87.00
	A+ Optical Mouse	69.00
800K Drive		179.00
	1200 Baud Modem	99.00
	2400 Baud Modem	189.00
	19" Sony Monitor	2950.00
MacLarger		339.00
	Qume LaserPrinter	3950.00
	Grappler	66.00
	Personal Writer	695.00
	Seikosha Printer	225.00
	MacVision	249.00

Memory Upgrades

128K-512K	139.00
128K-1024K	299.00
128K-2048K	499.00
512K-1024K	169.00
512K-2048K	429.00
1Meg SIMMs	219.00
SCSI Port	79.00
68030 Accelerator	call
Dove Upgrades	call

Disks/Ribbons & Accessories

Sony DS Boxed	18.50
Sony SS Boxed	12.75
Sony DS Bulk	1.47
Sony SS Bulk	1.09
MacDisk DS	1.25
MacDisk SS	.99
Black Ribbons	3.00
Colored Ribbons	5.00
Multicolored Ribbons	12.00
MacPlus Bag	59.00
MacSE Bag	69.00
ImageII Bag	55.00
Disk File/30	7.00
Teak 90 Disk Holder	22.00
Hypercard Handbook	19.95

MacCustomer Buying Service

MacProducts USA is now offering special pricing for all customers who purchase products through our MacCustomer Buying Service. Simply put, when you become a MacCustomer, you pay a small fee and you may then buy items for a significantly lower price than that found anywhere in the world. The fee that you pay is based upon this schedule:

Fee:	Buy Level:	Term:
\$100	Up to \$1500	3 Months
\$200	Up to \$4000	One Year

Look over these sample prices to see the type of savings you can expect by becoming a MacCustomer:

dBaseMac	\$289	MacMoney	\$49
20MB Drive	419	Falcon	28
PageMaker	309	Suitcase	33
MacSE Bag	49	Grappler	56
1200 Modem	83	800K Drive	164

Call our customer service staff at 1-800-MAC-DISK for details.

Ordering & Information

National: 1-800-622-3475
Texas: 1-800-2MAC-TEX
FAX: 512-835-7315

Mail Orders to:
MacProducts USA
9709 Brown Lane, Suite E
Austin, Texas 78754

Hours: 7:30am-7:30pm CDT. There is a \$40 minimum on all orders. We accept **American Express**, Visa, MasterCard, C.O.D., Company and Institution PO's, and checks. **YOU ARE NOT CHARGED UNTIL WE SHIP YOUR ORDER.** TX residents add 8% sales tax. Prices and items are subject to change and availability. Returns may be subject to a restocking fee.

Shipping Information: Minimum \$4 additional. **Federal Express**, UPS Next Day & 2nd Day Air, US Mail.

Please call for products not listed. We also rent software for 1/5 of the purchase price.

MacProducts USA

Circle 86 on reader service card



AnthroCart®

The original AnthroCart. Mobile. Incredibly strong. So many ways to solve your space and equipment problems. Choose different sizes. Move shelves around. Add space saving options.

AnthroCart. Well designed technology furniture. Look for our name.

Call us: 800-325-3841



*Made in U.S.A.
Holds up to 150 lbs.*



**Anthro® Corporation
Technology Furniture**

3221 N.W. Yeon St.
Portland, OR 97210
503-241-7113

Anthro Corporation is a subsidiary of Tektronix Inc.
Anthro is a registered trademark of Anthro Corporation

MORE FOR YOUR MAC...

UTILITIES

Affinity	
Tempo II	89.00
ALSoft	
DiskExpress	38.00
Font/DA Juggler Plus	44.00
Berkeley System Design	
Stepping Out (full screen w/o scrolling)	59.00
CE Software	
DiskTop 3.0	31.00
QuickKeys (new macro programmer)	62.00
Central Point	
Copy II Mac(with MacTools)	20.00
Emerald City Software	
Lasertalk 1.0	187.00
Ideaform	
Disk Quick (hard disk organizer)	27.00
Intellisoft	
Bookmark	61.00
Kent Marsh	
MacSafe	94.00
NightWatch	109.00
Mainstay	
Capture	47.00
TypeNow	30.00
Microanalyst	
MacZap (disk utility)	36.00
Olduvai	
DA Switcher II	63.00
Font Share	159.00



Draw It Again, Sam (Aba Software)
— Object-oriented drawing program
with unlimited graphics/text libraries.
(graphics) \$95

Software Research	
MacTree	38.00
Software Supply	
Power Station	38.00
Suitcase	38.00
SuperMac	
DiskFit	54.00
Sentinel 1.0	155.00
Super Spool	49.00
Super Laser Spool - Single User	82.00
William & Macias	
MyDiskLabeler-Color	31.00
MyDiskLabeler-LaserWriter	34.00
Working Software	
Findswell	29.00

DESK ACCESSORIES

Activision	
Focal Point	62.00
Affinity	
AffiniFile	49.00
Allan Bonadio Associates	
Expressionist (equation editor)	49.00
Borland	
Sidekick 2.0	65.00
Electronic Arts	
Disk Tools Plus	31.00
Green	
QuickDEX	24.00
Imagine	
Smart Alarms and Appointment Diary	35.00
Mainstay	
Think'n Time	61.00
Olduvai	
Icon-It!	48.00
Solutions	
Smart Scrap & The Clipper	37.00

Symmetry	
HyperDA	38.00

LANGUAGES

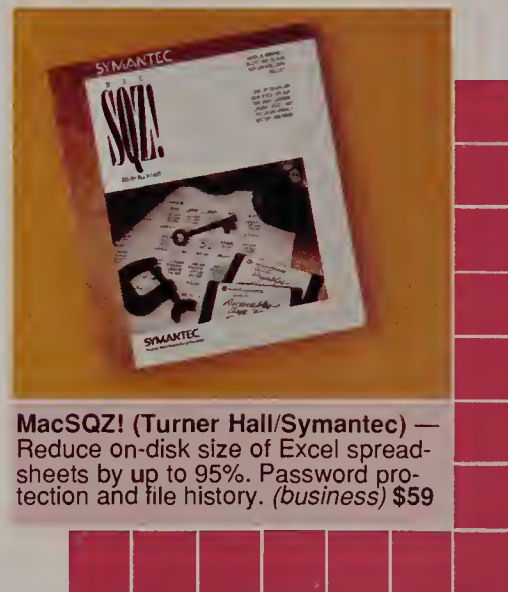
Borland	
Turbo Pascal	59.00
Consulair	
68000 Development System	59.00
Icom Simulations	
TMON (debugger)	94.00
Microsoft	
Basic Compiler 1.0	119.00
Basic Interpreter 3.0	61.00
Fortran Compiler 2.2	169.00
Think Tech	
Lightspeed C (super compiler)	95.00
Lightspeed Pascal	65.00
Zedcor	
ZBasic	65.00

COMMUNICATIONS

CompuServe	
CompuServe Subscription Kit	24.00
Data VIZ	
MacLink Plus w/Cable	145.00
Dow Jones	
Desktop Express	96.00
FreeSoft	
Red Ryder 10	49.00
Hayes	
Smartcom II (communications)	88.00
Software Ventures	
Microphone 1.1 (includes Glue)	119.00

DATABASE SOFTWARE

1st Desk Systems	
1st File	59.00
Acius	
4th Dimension	600.00
Ashton-Tate	
dBase Mac	295.00
Borland	
Reflex Plus	165.00
Nashoba Systems	
Filemaker Plus	149.00



MacSQZ! (Turner Hall/Symantec) —
Reduce on-disk size of Excel spread-
sheets by up to 95%. Password pro-
tection and file history. (business) \$59

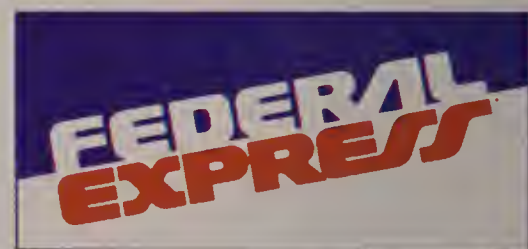
Odesta	
Double Helix II	349.00
Software Discoveries	
Record Holder Plus	45.00

BUSINESS SOFTWARE

1st Desk Systems	
1st Merge	59.00
Activision	
Business Class	30.00
Borland	
Eureka: The Solver	129.00
Bravo	
MacCalc	79.00
Cricket	
Cricket Graph (advanced graphing)	119.00
Cricket Presents	310.00
Deneba Software	
Comment 1.1 (post notes to files)	59.00
Microsoft	
Excel 1.04	265.00
PowerPoint	249.00
Works 1.1 (integrated software)	185.00
North Edge Software	
Timeslips III (time and expense tracking)	119.00
Satori	
Bulk Mailer 3.0	80.00

MacWAREHOUSE™

ORDERS NOW SHIPPED



Select Micro Systems

FlowMaster	369.00
Shana Enterprises	
FastForms! Construction Kit	96.00
Softview	
MacInUse (tracks usage)	42.00
Turner Hall Division/Symantec	
MacSQZ!	59.00

WORD PROCESSORS AND OUTLINERS

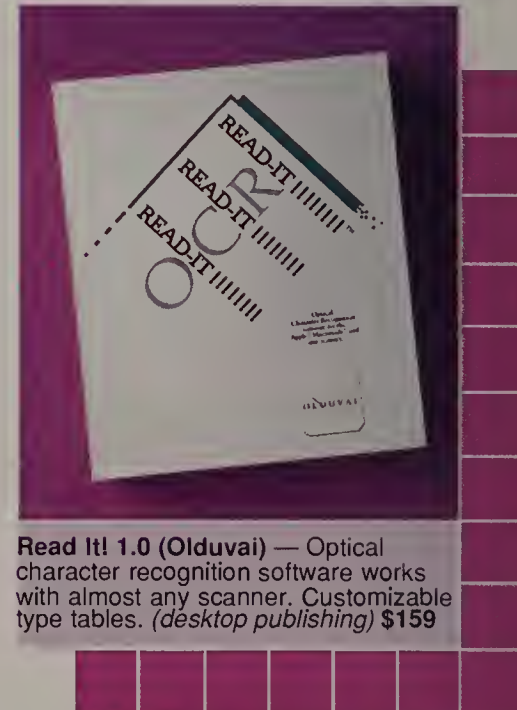
Bootware Software	
Pro Resume Writer (multiple resumes)	75.00
Microsoft	
Word 3.01 (updated word processor)	239.00
Write 1.0 (new word processor)	111.00
T-Maker	
Write Now (word processor)	98.00

SPELLING CHECKERS

Aegis	
Doug Clapps Word Tools	42.00
Deneba Software	
Spelling Coach 3.0	59.00
Spelling Coach Pro	109.00
Coach Merriam-Webster Thesaurus	36.00
Electronic Arts	
Thunder (spelling checker)	30.00
Microlytics	
Word Finder (synonym finder)	39.00
Working Software	
Spellswell 2.0 (spelling checker)	42.00

GRAPHICS

Aba Software	
Draw It Again Sam	95.00
Activision	
Postcards	20.00
Ann Arbor	
Full Paint (full screen graphics)	49.00
Broderbund	
Print Shop (cards and more)	36.00
CE Software	
CalendarMaker	27.00
Cricket	
Cricket Draw	169.00
Pictograph (color on the Mac II)	105.00



Read It! 1.0 (Olduvai) — Optical
character recognition software works
with almost any scanner. Customizable
type tables. (desktop publishing) \$159

Deneba Software	
Canvas	119.00
Dubl-Click	
Wet Paint - Both Volumes	36.00
Enzan-Hoshigumi	

Required Reading!

The Final Word in Macintosh Catalogs is **FREE!**

We've been behaving like groundhogs for months preparing what we believe is the consummate Macintosh Products Catalog. Friends and family dropped by the wayside as we spent every waking hour testing, reviewing and photographing hundreds of great products for the Mac! The 56 page color catalog is as much an informative "handbook" as it is a source for your Macintosh needs. Any product can be found instantly by using our color-coded indexing system. And once you're there all the product information is at your fingertips. Questions on copy protection, compatibility (both hardware and software) and function are answered in lively text punctuated with full-color photographs and informative screen dumps.

The Premier Edition of **MacWAREHOUSE CATALOG** is **YOURS FREE** with any order from Mac Warehouse. Or, if you're not quite ready to place an order, just send in the coupon below with your check for \$2.00 (for postage and handling refundable with your first order) and we'll mail you the Premier Edition. So don't wait. We'll rush your product and Free Catalog **FEDERAL EXPRESS STANDARD AIR** so in no time at all you can "curl up with a good book".

**AT MacWAREHOUSE THE SERVICE
IS GREAT AND SO ARE THE PRICES!**

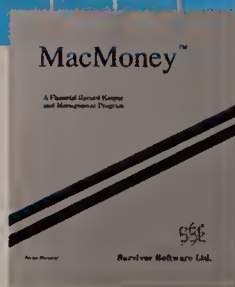
When you call we'll be ready to help. Our sales representatives are here to answer any questions and will always let you know about our many specials. Like...

800k EXTERNAL DRIVE



From Cutting Edge comes our most popular external floppy drive. Reads and writes 400/800K disks and is compatible with all ROM's. Convenient front panel eject switch. **Only \$179**

MacMONEY



This versatile, powerful and intuitive accounting package from Survivor Software has been developed specifically for your personal and small business use. Complete and easy to use. Full double-entry personal bookkeeping

MacWAREHOUSE CATALOG

1690 Oak Street
P.O. Box 1579

Lakewood, NJ 08701

Please send me the Premier Edition of the MacWAREHOUSE Catalog. I am enclosing my check for \$2 to cover postage and handling. I understand that my \$2 will be applied to my first order. Canadian residents must send U.S. Money Order.

NAME _____

ADDRESS _____

CITY _____

APT# _____

STATE _____

ZIP _____

MWE8



system and financial planning too. Integrates with MacInTax. Requires 512K. **\$65**

EMAC DRIVE



This zero footprint 20Mb hard drive from Everex comes with built-in SCSI intelligent controller and driver installed. Utility software, terminating resistor and connecting cables are included. Quiet running, fast data transfer, automatic head park and good looks compliment this top performer. **Just \$595.00**

SPELLING COACH

Deneba's best selling spelling checker desk accessory is compatible with over 95% of Macintosh software. Interactive features include as-you-type spelling checks and one-key corrections. Checks sections or a complete document at over 150 words per second. Includes Merriam-Webster's dictionary, Legal and Medical libraries. **\$59.00**

CHOOSE MacWAREHOUSE... For price, quality and service you won't find a better source for your Mac needs. If you don't see it here, give us a call. Most likely we'll have it in stock. Our sales representatives are here to help!

I'm Kerry, call me at:

MacWAREHOUSE™
1-800-255-6227

(1-800-ALL MACS)

Inquiries: 201-367-0440

Canada: 800-255-6447

FAX # 201-905-9279

MONDAY THRU FRIDAY

8 A.M. TO 11 P.M.

(Eastern Time)

SATURDAY 8 A.M. TO

8 P.M. (Eastern Time)

NOW OPEN SUNDAYS!

8 A.M. to 8 P.M.

(Eastern Time)

Circle 78 on reader service card



Enzar
MacC
Great
Crysta
Micro
MacA
Minds
Graph
Olduv
Post-A
Silico
Super
Super
Solut
Curat
Super
Pixel
Symm
Pictur
T-Mak
ClickA
ClickA
ClickA
ClickA
Zedco
DeskF

Adob
Illustr
Aldus
Page
Letra
Image
Ready
Olduv
Read-
Read-
Solut
Super
Targe
Scoop

Mar
Mas
bud
and

N/
Faral
Phone
Phone
Phone
Micro
Mail
Nuvo
Turbo
Turbo

■ VISA and MA
■ Your credit ca
■ If we must shi
■ All U.S. shipm
■ C.O.D. orders
■ certified chec
■ Corporate pu
■ All products a
■ CT residents
SHIPPING
■ All orders ad
■ unless UPS c
■ We ship all o
■ otherwise at t
■ C.O.D. orders
■ (ground).
■ Alaska, Hawa

*Defective softwar

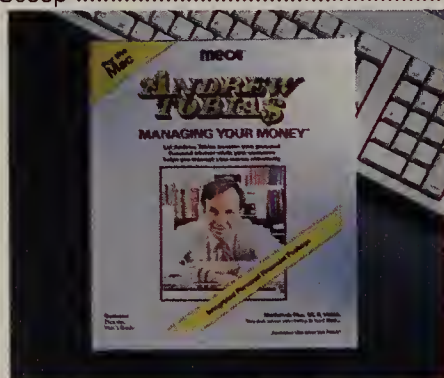
© Copyright 1987
Micro Warehouse

MORE FOR YOUR MONEY...

Enzan-Hoshigumi	
MacCalligraphy	115.00
Great Wave	
Crystal Paint	41.00
MicroMaps	
MacAtlas Pro (MacDraw format)	129.00
Mindscape	
GraphicWorks 1.1	84.00
Olduvai	
Post-Art	42.00
Silicon Beach	
Super Paint (super graphics)	79.00
Super 3D	195.00
Solutions	
Curator (graphics management)	79.00
SuperMac	
Pixel Paint	265.00
Symmetry	
Picture Base 1.2	59.00
T-Maker	
ClickArt Business Image	28.00
ClickArt Christian Images	31.00
ClickArt Effects or Holidays (ea.)	28.00
ClickArt EPS Illustrations	78.00
ClickArt Publications	28.00
Zedcor	
DeskPaint	39.00

DESKTOP PUBLISHING PRODUCTS

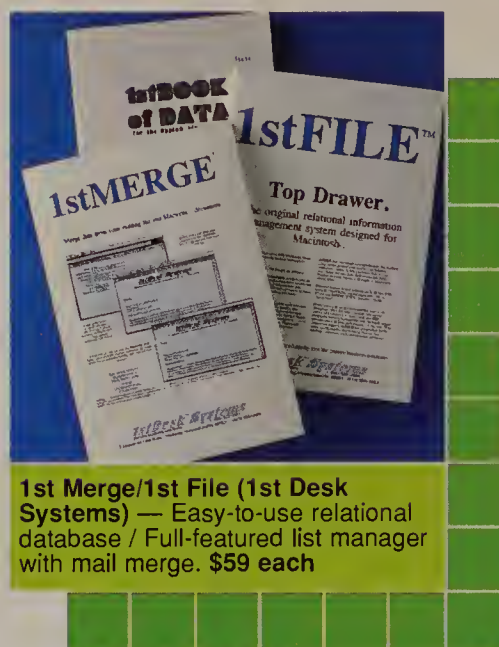
Adobe	
Illustrator 88	425.00
Aldus	
PageMaker 2.0	419.00
Letraset	
Image Studio	279.00
Ready-Set-Go 4	279.00
Olduvai	
Read-It! (optical character recognition) ..	159.00
Read-It! TS (ThunderScan version)	79.00
Solutions	
Super Glue (total graphics integration)	56.00
Target	
Scoop	199.00



Managing Your Money (MECA) —
Master your personal finances:
budgeting, check writing, net worth,
and more... (finance) \$129

NETWORKING PRODUCTS

Farallon	
PhoneNET 128/512	44.00
PhoneNET Plus, SE & II	44.00
PhoneNET Appletalk Adapter	8.00
Microsoft	
Mail	Call
Nuvotech	
TurboNET 128/512	35.00
TurboNET Plus, SE & II	35.00



1st Merge/1st File (1st Desk Systems) — Easy-to-use relational database / Full-featured list manager with mail merge. \$59 each

TurboNET Apple Talk Adapter	5.00
TOPS	
TOPS	170.00
WOS Data Systems	
Timbuktu 1.0	Call

Fonts

Adobe	
Fonts (various volumes)	Call
Altsys	
Fontastic Plus	47.00
Fontographer 2.2 (laserwriter fonts)	239.00
Dubl-Click	
World Class Fonts - Both Volumes	45.00
Postcraft	
Laser FX	119.00

CAD/CAM

Challenger	
Mac3D 2.1 (3-D graphics)	126.00
Diehl Graphsoft	
MiniCad	365.00
Innovative Data	
MacDraft 1.2a (power drafting)	155.00
Micro CAD/CAM	
MGMStation (professional CAD)	685.00

FINANCIAL AND ACCOUNTING SOFTWARE

BPI	
Entry Series General Accounting	129.00
MECA	
Andrew Tobias' Managing Your Money ..	129.00
Migent	
In-House Accountant	109.00
Monogram	
Business Sense	282.00
Softsync	
Accountant, Inc	179.00
Softview	
MacInTax 87	65.00
MacInTax California Supplement 87	35.00
TaxView Planner	45.00
Survivor	
MacMoney (personal finance)	65.00

STATISTICAL ANALYSIS

Abacus Concepts	
StatView II (req. Mac II, or Plus/SE w/68881 co-processor)	369.00
BrainPower	
MathView Professional	149.00
StatView 512+ (requires 512k)	177.00

Cricket	
Statworks 1.2 (statistical package)	74.00
D2 Software	
MacSpin 1.1	155.00

MUSIC AND SOUND

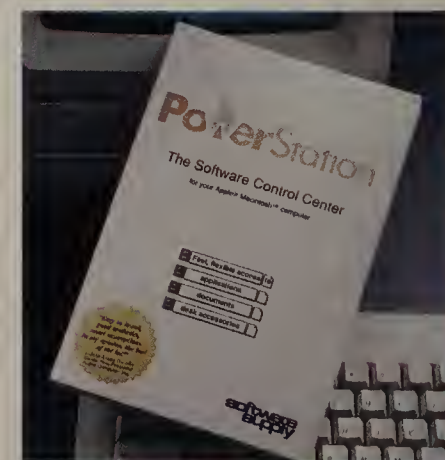
Bogas Productions	
Studio Session	52.00
Broderbund	
Jam Session	30.00
Cambridge Auto	
MIDI Conductor	49.00
Electronic Arts	
Deluxe Music Construction 2.0	61.00
Farallon Computing	
MacRecorder (records sound)	149.00
Great Wave	
ConcertWare + 4.0	39.00
ConcertWare + MIDI 4.0	79.00
Impulse	
Impulse Audio Digitizer w/SoundWave ...	149.00
Periscope Press	
Practica Musica	77.00
Resonate	
Listen 2.0	62.00

EDUCATIONAL/PERSONAL

Broderbund	
Sensei Physics	61.00
Davidson	
Math Blaster	27.00
Word Attack!	28.00
Electronic Arts	
Business Simulator (executive training)	48.00
First Byte	
Kid Talk, Math Talk ea	32.00
Great Wave	
Kids Time	26.00
Learning Company	
Reader Rabbit	34.00
Mindscape	
Perfect Score S.A.T. (w/Perfect College) ..	47.00
Nolo Press	
Will Maker 2.0 (prepare your own will)	30.00
Palantir	
MacType	32.00

GAMES

Accolade	
Hardball	23.00
Activision	
Shanghai (strategy)	24.00



PowerStation (Software Supply) —
Fast, easy access to applications,
documents and DA's. Includes the
screen-saver Pyro! (utilities) \$38

- VISA and MASTERCARD accepted. No surcharge.
- Your credit card will not be charged until your order is shipped.
- If we must ship a partial order, we pay the freight on the remaining portion.
- All U.S. shipments are insured at no extra charge.
- C.O.D. orders accepted (add \$3.00 surcharge) — \$1,000 maximum. Cash or certified check.
- Corporate purchase orders accepted subject to credit approval.
- All products are covered by a 120 day limited warranty.
- CT residents add 7.5% sales tax. NJ residents add 6.0% sales tax.
- SHIPPING:**
- All orders add \$3.00 per order. We ship Federal Express Standard Air, unless ground delivers overnight.
- We ship all orders (except C.O.D.) via Federal Express Standard Air unless instructed otherwise at time of order.
- C.O.D. orders ship via UPS (Blue Label if you are more than 2 days from us via UPS ground).
- Alaska, Hawaii, Foreign, APO/FPO please inquire at time of order.
- Defective products are replaced immediately. Hardware replaced or repaired at our discretion.

© Copyright 1987 Micro Warehouse, Inc. MacWAREHOUSE™ is a division of Micro Warehouse, Inc. MacWAREHOUSE™ and Micro Warehouse are trademarks of Micro Warehouse, Inc. Item availability and price subject to change without notice.

I'm Kerry, call me at:

1-800-255-6227

(1-800-ALL-MACS)

Inquiries: 201-367-0440 Canada: 800-255-6447

FAX # 201-905-9279

MacWAREHOUSE™

1690 Oak Street, P.O. Box 1579,
Lakewood, NJ 08701

MONDAY THRU FRIDAY 8 A.M. to 11 P.M. (Eastern Time)

SATURDAY 8 A.M. to 8 P.M. (Eastern Time)

NOW OPEN SUNDAYS! 8 A.M. to 8 P.M. (Eastern Time)

MWE8



FROM MacWAREHOUSE™

Artworx	
Bridge 5.0	22.00
Avalon Hill	
MacPro Football	28.00
Broderbund	
Ancient Art of War (battle strategy)	27.00
Bullseye	
Ferrari Grand Prix (racing)	32.00
Fokker Triplane Flight Simulator	32.00
Electronic Arts	
Chessmaster 2000 (deluxe chess)	28.00
Patton vs. Rommel (strategy)	27.00
Scrabble (word game)	27.00
Skyfox (3-D dogfight)	15.00
Epyx	
Sub Battle Simulator	24.00
Greene	
Crystal Quest	28.00
Infinity	
Go	31.00
Infocom	
Beyond Zork	30.00
Hitchhikers Guide (the classic)	18.00
Leather Goddesses of Phobos	24.00
Microsoft	
Flight Simulator 1.0	32.00
Micro Sports	
MSFL Pro League Football	32.00
MSFL Pro Draft (create teams)	26.00
Miles	
Harrier Strike Mission II	27.00
Mindscape	
Balance of Power	30.00
Deja Vu (who done it)	30.00
Shadowgate	30.00



MiniCad 3.0 (Diehl Graphsoft) — Professional functions in 2D and 3D modes with easy transition back and forth. (cad/cam) \$365

Trust & Betrayal: The Legacy of Siboot	30.00
Uninvited	30.00
PBI	
Strategic Conquest Plus	46.00
Practical Computer	
MacCourses	34.00
MacGolf 2.0	36.00
MacRacketball	36.00
Primera	
Smash Hit Racketball II	22.00
Sierra On-Line	
Leisure Suit Larry	23.00
Silicon Beach	
Apache Strike	27.00
Dark Castle	26.00
Beyond Dark Castle	32.00
World Builder (game maker)	41.00
Simon & Schuster	
Star Trek - Kobayashi Alternative	24.00
Simulated Environment Systems	
Quarterstaff	29.00
Sir Tech	
Wizardry (classic fantasy)	35.00
Sphere/Spectrum HoloByte	
Falcon	26.00
Gato (submarine adventure)	26.00

DISK DRIVES/MEMORY UPGRADES

AST	
AST 2000(20 meg-20 meg tape)	1399.00
AST 4000(74 meg-60 meg tape)	3799.00

Central Point	
800K Laser Drive	195.00
CMS	
MacStack 20 Meg	615.00
MacStack 40 Meg	925.00
MacStack 60 Meg	990.00
MacStack 80 Meg	1,365.00
Cutting Edge	
800K Disk Drive	179.00
Dove	
Mach II/SE Accelerator Board	599.00
MacSnap 2SE	299.00
MacSnap SCSI Interface Port	85.00
MacSnap 524 (512k to 1 meg)	175.00
MacSnap 524S (incl SCSI interface)	219.00
MacSnap 548 (512k to 2 meg)	389.00
MacSnap 548S (incl SCSI interface)	449.00
MacSnap Plus 2 (MacPlus to 2 meg)	279.00
MacSnap 8S cmos (Mac II to 8 meg) ...	1,929.00
MacSnap Tool Kit (installation tools)	14.00
Everex	
EMAC 20D (hard drive)	525.00
EMAC 20D Deluxe (0 footprint)	595.00
EMAC 40D (hard drive)	945.00
EMAC 40D Deluxe (0 footprint)	995.00
EMAC 60T (tape backup)	895.00
IOMEGA	
Bernoulli Box (dual 10 meg)	1,419.00
Bernoulli Box (dual 20 meg)	1,849.00
MacWarehouse	
MacWarehouse ED20	559.00
Mirror	
MagNet 20X	729.00
MagNet 30X	799.00
MagNet 40/40	1,899.00
MagNet 40X	1,199.00
MagNet 85X	2,899.00
Magnum Tape 20 Backup	829.00
PCPC	
MacBottom HD21 (SCSI)	749.00
MacBottom HD21 (SCSI) w/Modem	915.00
MacBottom HD32 (SCSI)	899.00
MacBottom HD32 (SCSI) w/Modem ...	1,045.00
MacBottom HD45 (SCSI)	1,159.00
MacBottom HD45 (SCSI) w/Modem ...	1,295.00
Rodime Systems	
20 Plus External or Internal Drive	745.00
45 Plus External Drive	1,060.00
45 Plus Internal Drive	1,170.00

MODEMS

Everex	
EMAC 2400	245.00
Hayes	
Smartmodem 1200	299.00
Smartmodem 2400	489.00
Migent	
Pocket Modem (ext. 300/1200 baud)	168.00
Novation	
Parrot Pocket Modem (with software)	99.00
Shiva	
NetModem 1200 (modem for network use)	450.00
US Robotics	
Courier 1200 Modem	199.00
Courier 2400 Modem	349.00

BLANK MEDIA

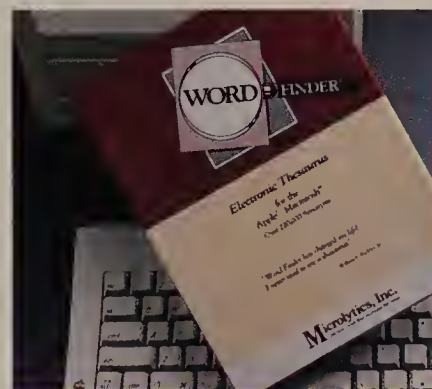
Goldstar	
DS/DD (box of 10)	15.00
Maxell	
DS/DD (box of 10)	20.00
SS/DD (box of 10)	14.00
Sony	
DS/DD (box of 10)	19.00
SS/DD (box of 10)	13.00

INPUT/OUTPUT

Abaton	
ProPoint	119.00
Asher Engineering	
Turbo Trackball (512/Plus or SE/II)	79.00
Cambridge Auto	
Numeric Ease	32.00
DataDesk	
Mac 101 Keyboard	141.00
Kensington	
Turbo Mouse	81.00
Turbo Mouse ADB (for SE and Mac II)	81.00
Koala	
MacVision (digitizer)	169.00
Kraft	
3 Bottom QuickStick	39.00
Lightgate	
Felix	99.00
Mouse Systems	
A+ Mouse (512, Plus)	69.00
A+ Mouse ADB (SE, II)	89.00

New Image

MacScan (feed-thru)	1,189.00
MacScan (flatbed)	1,749.00
Olduvai	
ADBridge	105.00
Seikosha America	
Seikosha Printer (dot-matrix)	229.00
Summagraphics	
Bit Pad Plus	339.00
MacTablet 6 x 9	289.00
MacTablet 12 x 12	379.00
ThunderWare	
ThunderScan 4.0 (incl. Powerport)	199.00
ThunderScan 4.0 Mac II Accessory Key ..	42.00



Word Finder (Microlytics) — Thesaurus DA with 220,000 synonyms. Automatic look-up and replacement. (spelling checkers) \$39

ACCESSORIES

Bantam	
Complete HyperCard Handbook (Goodman)	24.00
Bech Tech	
Fanny Mac	69.00
Curtis	
Ruby (6 outlets; filtered; 6 ft cord)	55.00
DataDesk	
HyperDialer	26.00
Ergotron	
MacTilt or MacTilt SE	68.00
Mouse Cleaner 360	15.00
Tilt/Swivel for Megascreen	85.00
I/O Designs	
Imageware II Carrying Case	49.00
IW II Ribbons-Black or Color	5.00
Four Color Ribbon	12.00
Matrix Film Ribbon-Black or Color	8.00
Macinware Plus Carrying Case	69.00
Macinware SE Carrying Case	76.00
Ribbon for Seikosha - Black	6.00
Innovative Tech	
Easel Plus	14.00
Pocket Pak (holds 6 disks)	9.00
Speed Pad	12.00
Kalmar	
Rolltop Cabinet 45 Teak (45 disks)	14.00
Rolltop Cabinet 90 Teak (90 disks)	21.00
Rolltop Cabinet 135 Teak (135 disks)	27.00
Kensington	
ADB Keyboard Cable—Extra Long	28.00
Anti-Glare Filter	33.00
AppleTalk Clips—cables or connectors	1.00
Disk Drive Cleaning Kit	20.00
Imagewriter II Cover	9.00
Macintosh Plus or SE Dust Cover	9.00
Mac II Monitor Cable Extension Kit	35.00
Mac II Stand	21.00
Mouseway (mouse pad)	8.00
Printer Muffler 80	38.00
Printer Stand	17.00
Surge Suppressor	34.00
System Saver Mac (fan and more)	64.00
Tilt/Swivel	22.00
MacCable	
Modem Cables (various)	Call
Printer Cables (various)	Call
SCSI Cables (various)	Call
MacWarehouse	
Mouse Pad	7.00
Magnum	
Mouse Mover	14.00
Orange Micro	
Grappler Interface	69.00

continued...



In the computer world there are probably 15 non-PostScript printers for every PostScript printer.

work. The printer manufacturers should be doing this work themselves. We don't have the programming staff to do it.

All of us with graphic arts applications are up against the wall in this—I don't want to do printer drivers, but I have an obligation to. There is another alternative: Apple should be doing the drivers. I had Apple in here last week. They agree.

What is the best output technology?

The film recorder. Film recorders are RGB-based—that's red, green, blue—and more flexible in their range of colors. Besides,

slides are the most professional presentation medium. For hard copy there are the new ink-jet and thermal printers. The thermal printers cost more than the ink-jet ones, but they offer better resolution and richer colors than the ink-jets. CalComp is going to switch to an RGB interface for its thermal printer.

Will it be a video screen dump like the process Seiko Instruments has been using for the last several years?

Yes. We'll work with the CalComp thermal printer and with the new Tektronix thermal printer that dithers colors to make up to 16 million available. While screen dumps are

not the way to create presentation slides—they only reproduce screen quality—our drivers take advantage of the maximum resolution of the printing device being used, just as PostScript does. Take our outline fonts, for example: I can show you output from an HP LaserJet using our outline fonts that rivals the quality of Adobe fonts.

Compare your font technology to Adobe's.

PostScript uses outline fonts, but Adobe fonts only work on PostScript printers. It's important to remember that in the computer world there are probably 15 non-PostScript printers for every PostScript printer.

Other than the QMS thermal printer that uses PostScript, there are no alternative printing technologies using PostScript. Don't get me wrong. I'm happy with PostScript, with the work Adobe did. It's a good job. But the whole world doesn't have PostScript.

(continues)

LIFE LINE.

You've put a lot of money into your Apple system. And what's more, it's provided you with the power to be your best. Power you can't afford to lose.

Protect Your Investment.
For just a few dollars you can have the extra assurance that your equipment will be there when you need it. The Grimes Universal Security Kit has been thoroughly evaluated by Apple Computer, Inc. and carries an excellent overall rating. We are an approved Apple manufacturer of peripheral hardware and accessories. So you know the security system will fit like a glove. It plugs right into your

Apple making it virtually theft-free and "borrow-free."
It won't matter if they take your calculator, your phone system, or your entire office. As long as the real power... your Apple Computer System, is still there, you're open for business.
A 24-hour security guard for \$44.95.
Pick up a Grimes Universal Security Kit at your local Apple Dealer today. Or call Grimes for a dealer near you.

GRIMES

115 S. Arovista Circle, Brea, CA 92621 714/671-3931 • FAX 714/671-1426

Grimes continues to expand! If you're a manufacturer's representative, contact the sales department at (714) 671-3931 for opportunities marketing the Grimes Universal Security Kit or other Grimes products in your area.



Get the lion's share online with GENie.™

“GENie changed my mind about what an online service can do for me! I always knew that GENie offered a princely selection of Special Interest Groups featuring thousands of software files, dynamic bulletin boards, lively discussions and “tips” from the experts. But now GENie gives me more than my share of valuable information services like NewsGrid and USA Today Decisionlines, American Airlines EAASY SABRESM personal reservation system, new and exciting multi-player games and access to Dow Jones News/Retrieval.[®] And the people on GENie are so friendly and helpful they make me feel like a member of royalty!

You don't need to pay a king's ransom to get the lion's share, because only GENie offers you so much online, for less.”

B. A. King

Services Available	Compare & Save	Pricing*			
		Registration Fee	Monthly Minimum	Non-prime Time Rates	
				300 baud	1200 baud
Electronic Mail • CB • SIGs/User Groups • Travel • Shopping • Finance • Reference Professional • Leisure • Games • News	GENie†	\$29.95	None	\$5.00	\$5.00
	CompuServe	\$39.95	None	\$6.00	\$12.50
	Other	\$49.95	\$10.00	\$8.40	\$10.80

***Get 2 Free Hours with Sign-Up.*

Just \$5 per hour. Get online today!

1. Have your major credit card or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial 1-800-638-8369. When connected, enter HHH
4. At the U#= prompt enter **XJM11827,GENie** then RETURN.

Need help or more information? No modem yet? We can help. In U.S. or Canada call **1-800-638-9636**.



We bring good things to life.

*Basic rates and services in effect 9/87 apply in U.S. only. †Non-prime time rates apply Mon.-Fri. 6 PM-8 AM local time and all day Sat., Sun., and nat'l. holidays. Subject to service availability. Some services offered on GENie may include additional charges.
**\$10 credit applies.

©1987 General Electric Company, U.S.A.



In theory, a PostScript clone can read a PostScript file, process the image, and produce it on paper.

Apple has taken a similar approach with its new line of printers—bitmap fonts at the low end of the line and PostScript at the top.

Yes, exactly. Apple still has PostScript, but the people there now recognize that there's another world out there and that high quality is possible on non-PostScript devices. The average user can barely tell the difference.

What are PostScript clones or PostScript emulators?

In theory, something that can read a PostScript file, process the image, and produce an image on paper that looks like the PostScript image. Actually the standard is not

that it should look like PostScript, but like output from a LaserWriter. Most people will use output from the LaserWriter to determine if the clone or emulator is properly implemented.

Adobe has its fonts locked up. What if I'm in Cricket Draw and want to rotate text in 3-D space? I need to run the font through a transformation matrix. But Adobe won't allow access to the character path information. It keeps font-path and font-data information secret. It doesn't want to allow other developers to access it, partly due to its agreement with Mergenthaler over fonts. Mergenthaler is very proprietary about its fonts.

But there is lots of other good font data available. We use URW [Unternehmensberatung Karow Rubow Weber GMBH] fonts. URW releases its font information to us: how to scale, rotate, and so on. They appear to work much like Adobe's fonts.

What's the down side of PostScript emulators?

They don't output like PostScript on the LaserWriter. They require different drivers—one for the thermal printer, one for the LaserWriter, and on and on. And there could be deviation from WYSIWYG. So it's important that they emulate PostScript closely.

So the emulators are going to recreate the chaos of the IBM PC world for Macintosh users?

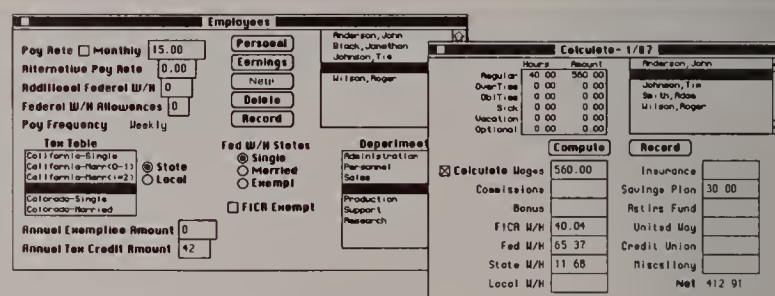
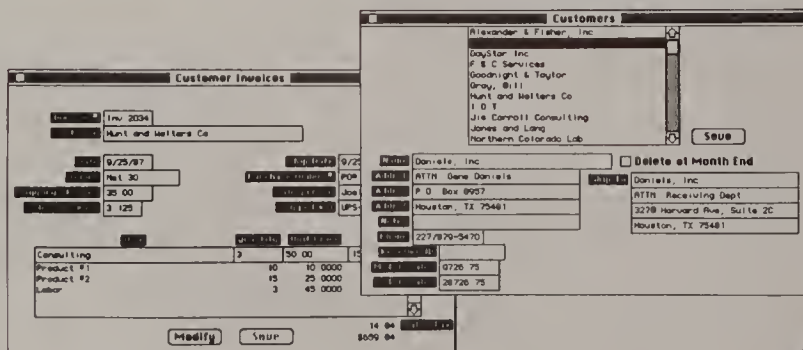
There is a very real potential for that. The real difficulty in emulating PostScript is emulating its bugs, such as the rounding errors that occur when PostScript rotates and moves text. It's common in the indus-

(continues)

Accounting Just Became Easier!

MultiLedger

- General Ledger **plus** Accounts Receivable **plus** Accounts Payable **plus** Inventory Tracking ... all in one easy-to-learn, easy-to-use program!
- Handles multiple companies, each with several departments or profit centers
- Prior period adjustments, automatic or future journal entries, full-year transaction history, budgeting, and prior year comparisons with graphs
- Aging reports, bank reconciliation, flexible financial statements, and many more valuable reports and features



Payroll

- A complete payroll system which can be used as a stand-alone program or can be integrated with **MultiLedger**
- Tax calculations for all states and federal
- Prints paychecks, W-2's, mailing labels, employee earnings register, payroll verification report, check register, posting summary, and tax summary
- Can easily handle multiple companies, departments, categories, pay periods, and compensation methods ... including tips, bonuses and commissions

CHECK MARK
SOFTWARE INC.

1520 E. Mulberry Suite 200 / P.O. Box 860 / Fort Collins, Colorado 80522
800-426-2466 ext 338 or 303-484-3541
In Canada, call (416) 731-0744

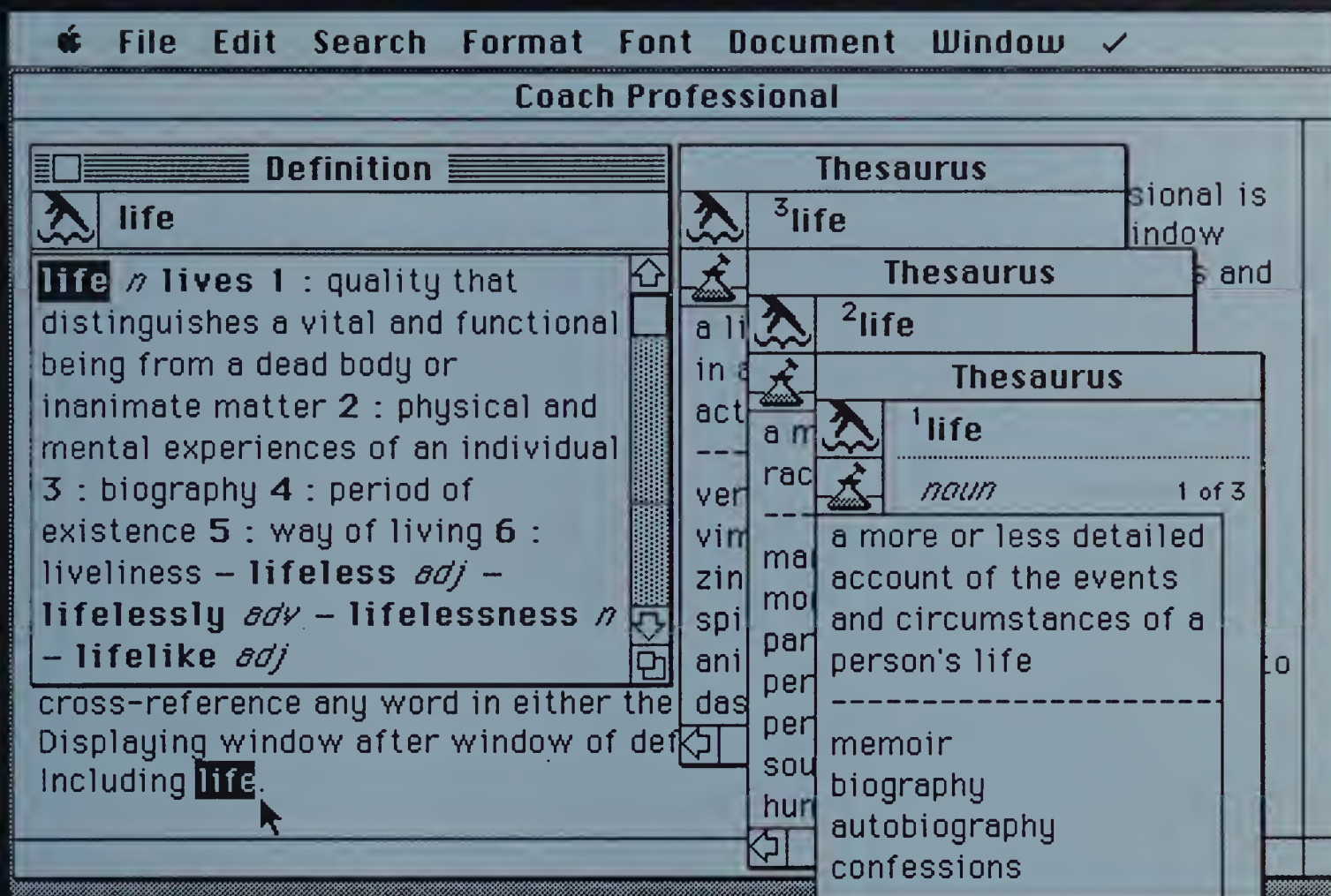
Dealer Inquiries Welcome

Circle 581 on reader service card

Demo: \$15 Each or \$25 Both
Credited toward purchase

Requires
512, 512E,
Plus, SE, or II

60 Day Money-Back
Guarantee



Spelling Coach Professional.™

The only spelling checker that will also teach you the meaning of life.

Stop packing. It's no longer necessary to climb a mountain in Nepal to consult a legendary guru. Because now there's Spelling Coach Professional.™ The first hyper-text spelling and reference system available for any microcomputer. It gives you instant access to Proximity/Merriam Webster's Concise 85,000 word electronic dictionary with *complete* definitions.

Installed as a desk accessory (Swamis can't do that), Coach Professional™ is extremely easy to use. Simply select any word and in seconds a window appears showing you its definition, its correct hyphenation and all uses and tenses. Just as they appear in Merriam-Webster's book version.

Coach Professional™ also includes the Coach™

Merriam-Webster Thesaurus. This 245 000 synonym thesaurus is organized by meaning group and is the only thesaurus with definitions to help you understand the difference between each meaning.

You can use Coach Professional™ interactively (as you type), or your completed documents can be scanned at over 150 words per second. It shows your misspellings in context and suggests the correct spelling. Then one click and the correction is made.

In addition to the spelling dictionary, Coach Professional™ includes a medical dictionary, a legal dictionary and even contains a special

20 000 word geographical and biographical supplement.

So if you're looking for the meaning of it all, look into Coach Professional.™ At \$195, it's at least ten times cheaper than a round-trip ticket to Kathmandu.

Also available from Deneba are Spelling Coach™ (spelling checker only) at \$99.95 and Coach™ Thesaurus at \$59.95. See your local dealer for a complete demonstration of any of our products. Or call us at 1-800-622-6827. In Florida call (305) 594-6965.

Deneba
SOFTWARE

7855 N.W. 12th Street Suite 202
Miami, FL 33126

Circle 180 on reader service card



It is in Apple's favor to have files from Windows products be totally interchangeable with Mac files.

try; you have to clone the bad as well as the good for one product to behave exactly like another. One of our engineers worked on emulating PC networking at Burroughs. He said they could duplicate the implementation of the architecture, but it was tough to duplicate IBM's bugs.

Many people at Apple are concerned that its key developers, companies like Crick-et, have become developers for the IBM PC. Is that concern justified?

The concern is real and legitimate. We have never had any problems with Apple about that, though. There are two sources for their worry. The first is the fear that Mac product development will slip due to de-

velopers shifting resources to PC development. The second source of concern is about Windows—that developers will shift their advertising dollars to support the Windows product because there's a perception that the real money to be made in software is with IBM, not the Mac.

We don't have problems with Apple over that because we have total commitment to the Mac. All our new products come from Mac products, all products for the PCs are part of the existing Mac product line. We have separate development staffs, and we keep our advertising dollars on Mac products. I believe that graphics software developers will have greater success in the Mac market than with the PC.

Apple's concerns are based in part on companies such as Aldus, which last year implied that by the end of 1987 most of its

profits would come from its PC products. Now the people at Aldus wake up and see that the majority of its sales still come from the Mac side.

Still, people at Apple ask us, "Is your product slow in shipping because of your development of PC products?" We say, "Never."

I happen to believe that it is in Apple's favor to have files from Windows products be totally interchangeable with Mac files. John Sculley has made a point of saying exactly this—neither Apple nor IBM can say "We're the only computer in the world." Developers have to give users flexibility of this sort.

How do your Mac products compare to your PC products?

In functionality, they are the same. In speed, it takes an IBM 286 or 386 machine running Windows to rival the speed of the Mac. Keep in mind that Windows was designed to solve the inherent problems of the DOS environment, but the Mac was de-

(continues)

New Turbo Trackball from Asher!



The Turbo Trackball is a versatile, reliable, easy to use and very accurate device for sophisticated desktop publishing, graphics, CAD/CAM, and many other applications. (For example, this entire ad, including the illustration was desktop published using the Asher Turbo Trackball).

Only the Asher Trackball gives you precise fingertip control in a space saving, low profile, ergonomic package designed with a patented hi-tech encoder used in sophisticated aerospace instrumentation; like aircraft, missiles, torpedos, gyros and space shuttles.

Also Available for IBM PC,XT,AT computers.

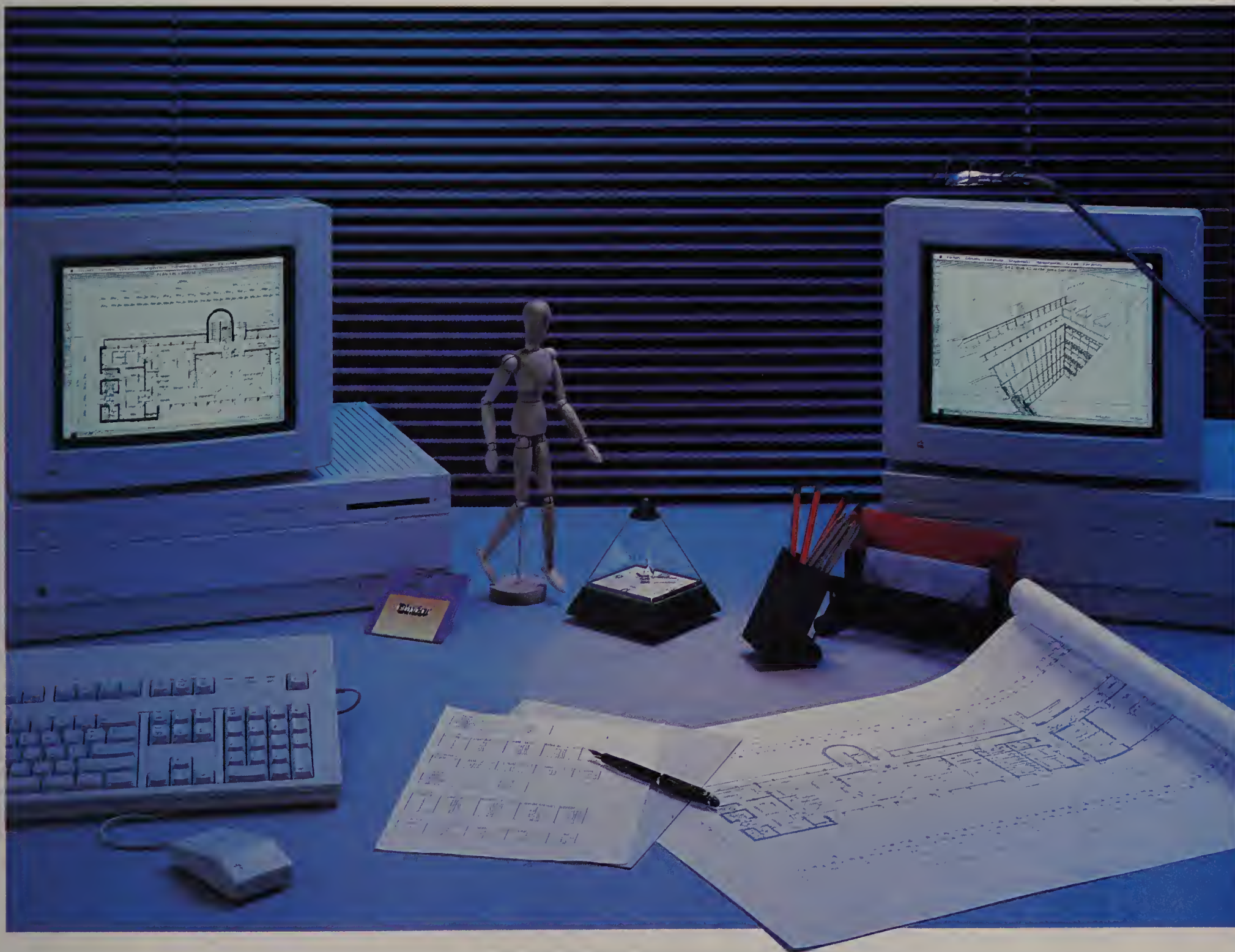
	ASHER Turbo Trackball	ABATON ProPoint	KENSINGTON Turbo Mouse
Technology	Patented encoder	Opto-Mech	Opto-Mech
Manufacturer	Asher Eng.	3rd Party	3rd Party
Digital Accuracy	Yes	Yes	Yes
Precision	250 CPI	200 CPI	> 200 CPI
Dual ADB Ports	Yes	Yes	Yes
Shift Lock Key	Yes	Yes	No
MTBF*	25 years	21.7 years	7.5 years
MTTR**	10 days	?	?
Left or Right Hand Option	Yes	No	No
30 Day Money Back Guarantee	Yes	No	No
Warranty	Lifetime	Lifetime	90 Day
PRICE	\$119.95	\$159.95	\$129.00

*MTBF-Mean time between failure **MTTR-Mean time to repair

To find out more, see your authorized Apple dealer or call **800-824-3522** (outside CA) or **818-960-4839** (in CA).

ASHER ENGINEERING 15115 Ramona Blvd., Baldwin Park, CA 91706

DISCOVER THE NEW CAD STANDARD FOR ARCHITECTURE AND THE BUILDING INDUSTRY



MAC ARCHITRIONTM 3.5

MAC ARCHITRIONTM 3.5 is an integrated professional CAD package with 3 modules :

- real volumetric 3D (space-processor),
- very powerful and versatile 2D,
- quantifier.

GIMEOR INC.



1815 H. Street N.W.
Washington D.C. 20006
(202) 223-4373 or (202) CAD HERE

130 Pleasant Street
Brookline MASS 02146
(617) 566-6315

Circle 129 on reader service card

Please send me more information on MAC ARCHITRION 3.5

Name _____

Title _____

Company _____

Address _____

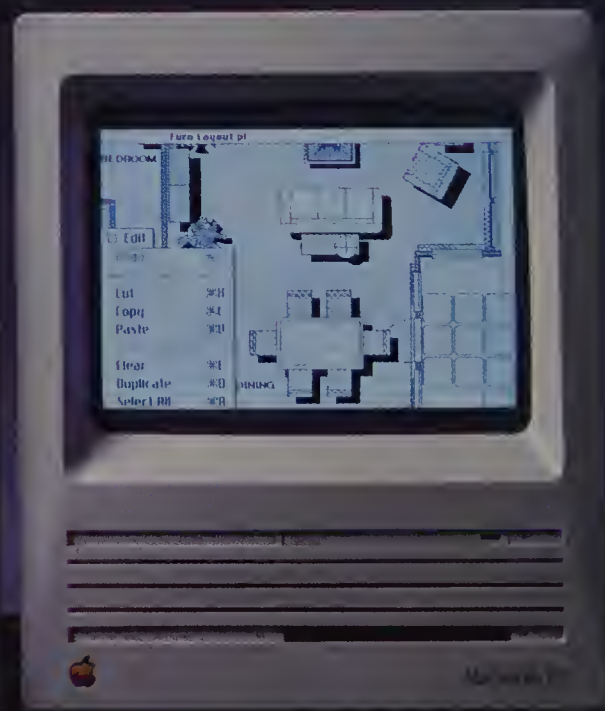
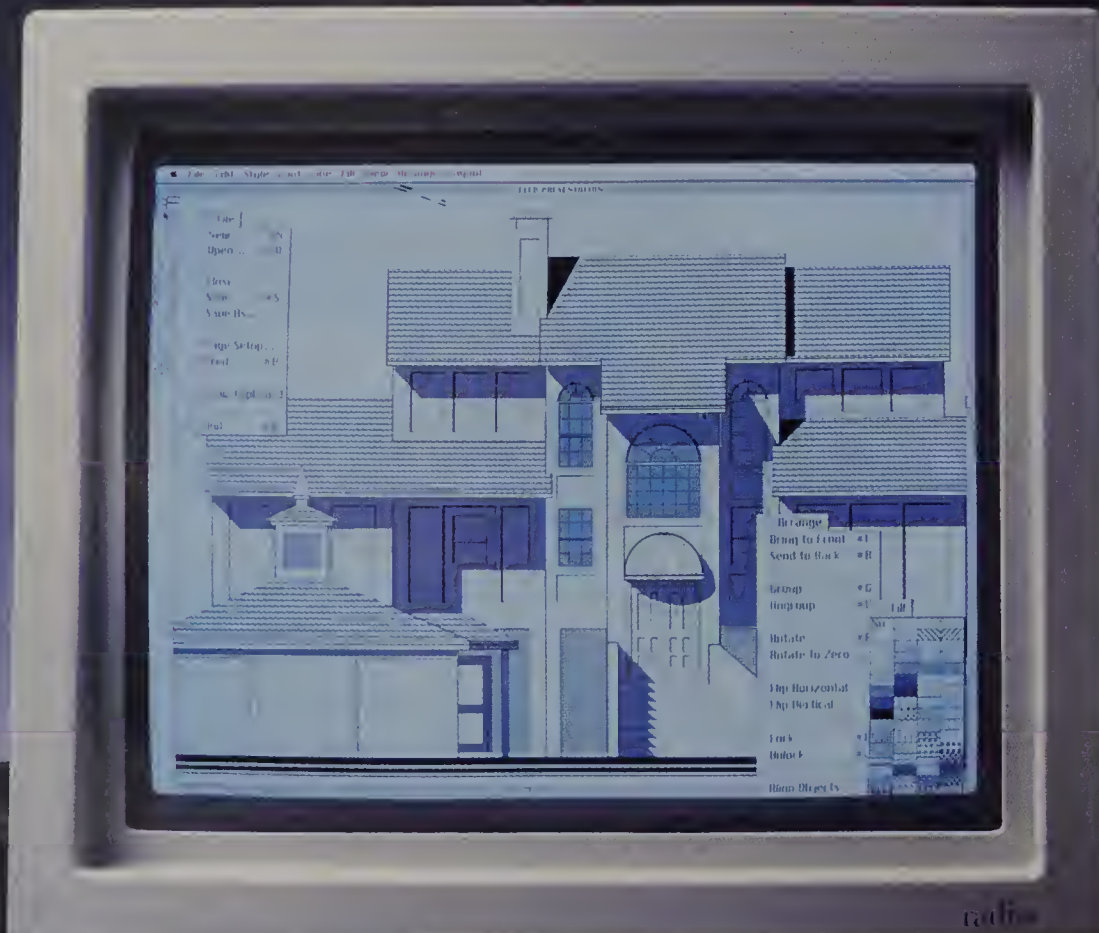
City _____

State _____

ZIP _____

Mail to : GIMEOR INC., 1815 H. Street N.W., Washington D.C. 20006
or 130 Pleasant Street, Brookline, MASS. 02146

RED LINE



FOR THE SOFTWARE THAT'S HERE. AND THE SOFTWARE THAT'S COMING.

PageMaker, Microsoft Excel, Illustrator, MultiFinder, and 4th Dimension. The second generation of Macintosh software is here now. The third generation is already beginning to arrive.

Your Macintosh SE alone can't keep pace with the ever increasing sophistication of Macintosh software.

But it can with a productivity system from Radius.

Totally compatible with your Macintosh SE, from its aesthetics to its electronics, there's a Radius System designed for your particular working style.

Our Document Processing System consists of a 640 x 864 pixel Radius Full Page Display™ that lets you work on a virtually paper-like 8½" x 11" page.

Then we add our Radius Accelerator 16™ and quadruple the speed of all of your Macintosh applications from Ready, Set, Go! to HyperCard.

Our Professional Publishing System features a 1152 x 864 pixel Radius Two Page Display™. Now you're working right across a double page spread or a full-scale B size drawing.

Then we add our Radius Accelerator 25™ and you're working at six times the speed of a Macintosh SE.

Which means our Accelerator 25 has you roaring along faster than a Macintosh II.

For Engineering and Design and intensive number crunching, we add something even a bit more powerful: the MC68881 mathematical coprocessor.

It does floating point computations at one hundred times the speed of your Macintosh SE. Combined with the immense canvas of the Two Page Display and the

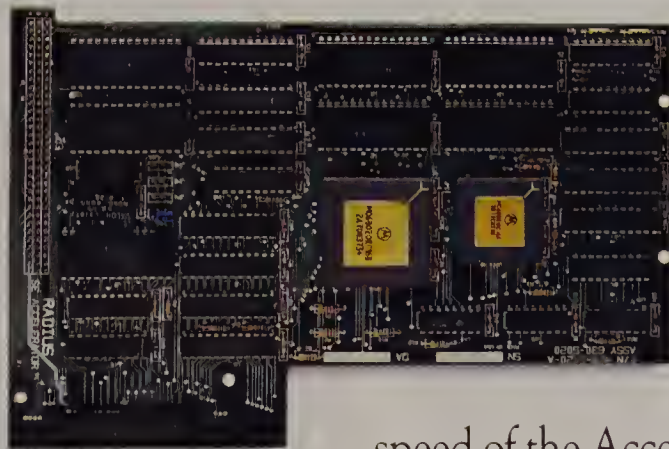
speed of the Accelerator 25, it takes you to the very limits of programs like Excel and MacDraft.

Both Radius Accelerators offer our innovative MagicBus™ which allows you to configure your Macintosh with either our Full Page Display or Two Page Display. So, you can complete your Radius System all at once or add the components one at a time.

To see the most powerful and sophisticated Macintosh software run at its full potential on a Macintosh SE, try a hands-on demonstration of the Radius System that fits your personal working environment.

Call 1-408-434-1010 for a brochure and the name of the authorized Radius dealer nearest you.

And get the most out of your Macintosh SE and its software. Today. And tomorrow.



radius™
Intelligent Hardware™



I dream of one product with data-drive graphics, image processing, paint, draw, and page-layout capability.

signed from the ground up. There are tens of thousands of minor details in the Mac interface that were all worked out long ago. A lot of attention to details. Also, Windows is trying to ensure that all mouse operations have a keyboard equivalent. I think that compromises the interface.

If you could develop the product of your dreams, what would it be?

A total graphics environment. One product with data-driven graphics, image processing, paint, draw, and page-layout capability. Actually, in those terms such a product is quite possible, but few computers are capable of running it today. A Mac II with a

large screen, color, lots of memory...it's not really practical yet.

What is the most needed Macintosh improvement today?

DMA—direct memory access so that the input and output of data from the CPU can be faster. DMA would allow large amounts of data to be moved faster. Look at some of the applications today—we're looking at 4- or 5-megabyte images. These are the kinds of things that people will want to transfer between machines soon. They're memory-intensive. Color and high resolution chew up memory. The new math coprocessor from Motorola will have two to four times the speed of the current chip. For graphics processing we need to implement parallel

processing. We need about a 10-MIPS (million instructions per second) machine to support high-speed graphics.

If you were setting up a small business today with a Macintosh, what hardware and software would you choose (not including your own)?

A Mac II, an Apple color monitor, a hard disk with a minimum of 40MB, a minimum of 2MB to 5MB of RAM—5MB would be better. AppleTalk, a LaserWriter Plus, a scanner of some sort. I would buy an HP ScanJet for gray-scale input at 300 dots per inch.

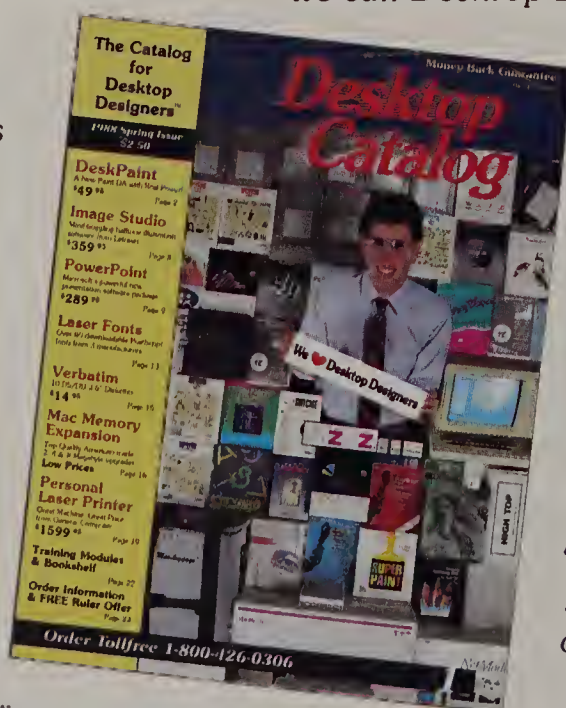
Probably a desktop publishing package, too—probably both PageMaker and Quark XPress. And a good word processor like Word or WriteNow, depending upon the nature of the work I would be doing. For a spreadsheet, Excel, definitely. A paint program like SuperPaint, a draw program like MacDraw, and a business graphics program.

(continues)

"That's right, it's a catalog just for Desktop Publishers, Presenters and Graphic Artists—all the professionals we call Desktop Designers."

"We've got good prices and all the tough-to-find design products. We've got training materials and books, too."

"Can you justify existence without it?"



"Are we good guys? How can you look at this sincere, honest face and ask such a question?"

"You really should call or write for your copy today..."

Desktop Catalog

1-800-426-0306

Desktop Corporation
P.O. Box 7336
Boise, Idaho 83707
(208) 384-5222

"You're among friends at Desktop Catalog"

Circle 22 on reader service card

Monitors for the Apple Macintosh II

Bushel of Apples



A complete line of 13V", 15V", 19V" and 35V" high performance color monitors fully compatible with the Apple® Macintosh™ II is now available from Mitsubishi Electronics. Whether for desktop or boardroom, Mitsubishi has the perfect monitor. Make the move to Mitsubishi® today for all your Macintosh II needs.

Mitsubishi Electronics America, Inc., Computer Peripherals Division, 991 Knox Street, Torrance, CA 90502. Telephone: (213) 515-3993, ext. 382.



Apple is a registered trademark of Apple Computer, Inc.

Circle 65 on reader service card

SEE HOW DATACOPY IS TURNING THOUSANDS OF MAC[®] USERS COMPLETELY GRAY.

Call us today and we'll show you what a Datacopy scanner with an unprecedented 256 levels of gray can do for your image.

We'll also send you information on the most complete line of scanners and software available for the Macintosh.[®] Including our latest OCR product — MacOCR.[™] The OCR system that works with all your favorite wordprocessing programs.

So call us at 800-821-2898 and discover the brighter side of gray.



DATACOPY

THE EYE OF THE COMPUTER[™]

Circle 377 on reader service card

The Eye of the Computer and MacOCR are trademarks of Datacopy Corporation. Macintosh and Mac are registered trademarks of Apple Computer, Inc.

Ashton-Tate announces the most powerful database ever

Project Edit Windows View Snapshot

Company Data

Ashton-Tate Customer Information

Global Info., Inc.

Address: 2121 67th Street
City: New York
State: NY
Zip: 10000
Phone: 212-555-1212

CompanyID: 6108
Employees: 1000+
SIC Code: 5555
Fortune Rating: 93
Current Customer: Yes

Potential: ☐ Greet ☐ Sell ☐ So-So ☐ Forget It!

Edit

New Field for the 'Invoices' File

Field Name: Total Sales
Field Type: Data
Contents are: Single Valued
Justify: Right
Format: Fixed
Decimal: .
Thousands: ,
Negative: -n
Currency: \$
Initial Value:
Range:
Keep New Initial Value: ☐
Index: ☐
Required: ☐
Save Done Clear

Project Edit Windows View Design

Invoice Entry

Take 2 Videos

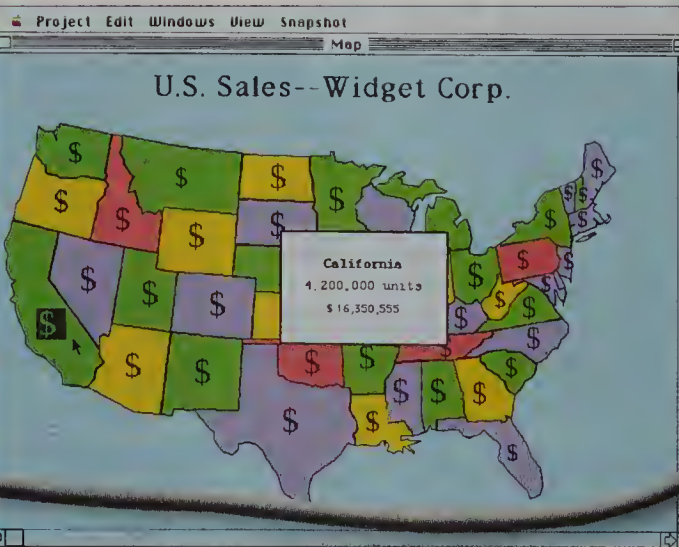
Invoice #
Date
Patron ID
Last Name
Videos
Sales Tax
Invoices

Project Edit Windows DataFile

Create New File or Structure

☒ Create New File
☐ Create Structure for Existing File

File Type: Foreign
Record Terminator: Carriage Return
Field Size: Variable Size, Delimited
Field Delimiter: Comma (,)
Cancel



Project Edit Windows View

Retail Video System/Database Structure

Patrons
Invoices
Video Inventory

Invoice Entry Form

Path: Invoices
Relations: Patrons, Video Inventory
Fields: Invoice #, Date, Date Due, Sales Tax, Amount, Videos Return, Patrons, Video Inventory
Hierarchy Field: Break, No Break, Accumulate Total, Explode, New, Change, Remove
Show View Description
Show View Procedure

Project Edit Windows View Snapshot

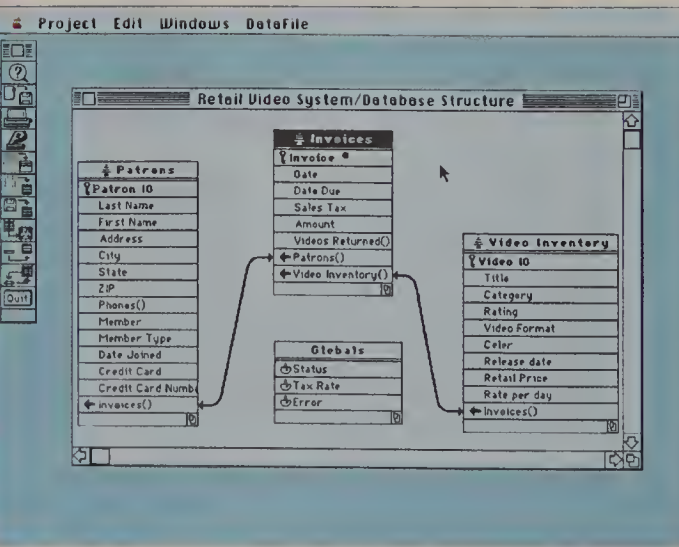
Call History

Call History REPORT

Contact Record Number

Last Name: TOWSEN
First: TOM
Title: PURCHASING
Phone: 713-4394-0559

Date	Type	Results	Next Call
6/4/87	Prospecting	Intro Call - Set Appointment for 6/15	2 Week
6/15/87	Presentation	Presented product, set up demo 6/17	1 Week
6/17/87	Demonstration	Demo'd product, closed sale	1 Month
7/15/87	Good will	Follow up call, got referrals	Much Later
7/21/87	Gooding Off	Went to LAVERS game	1 Month
10/5/87	Presentation	Presented annual contract, signed	1 Month



Project Edit Windows View Snapshot

Contacts by Company

Company Name	Address	City	State	Zip	Last Name
Global Info, Inc.	2121 67th Street	New York	NY	10000	JONES
Laser Layout Ltd	6969 14TH Street	Seattle	WA	98145	LAWRENCE
	1372 Maple Blvd	Chicago	IL	10384	JACKSON
	10101 Magnolia	Cupertino	CA	95014	SAUNDERS
	4321 Main Street	Los Angeles	CA	49584	MORTON
	9845 Avenue K	Dallas	TX	49589	BREWSTER
	1938 FUNKEY A	FT WORTH	TX	94899	DOUGHERTY
	984 Ross Ave	Dallas	TX	75201	CLARK
	1448 Lincoln Road	San Francisco	CA	97325	SOUTHERLAND
					JONES
					ARTHUR
					CHRISTY
					JOHNSON
					SMITH
					PALMER
					BAKER
					LENDRIK
					ARNOLDS
					SCOTT
					PARRELL
					JACKSON
					MONTGOMERY
					DAVISON

Project Edit Windows View

Transfer Proj/Database Structure

My Clients
Record Number
First Name
Last Name
Address
City
State
Zip

Company Clients
Record Number
Salary
Benefits
Picture
Start Date
Last
First
Title

Refer Names to Company

From
To: Company
Change

Project Edit Windows View Snapshot

Invoice Lookup

Widget Corp.

Invoice # 35241
Date 7-5-87
Customer Paxon Htg
Comment Client needs complete subassembly kit for AC/0 as well as the technical specifications for GGR-345 and GR-312. Complete order promised for delivery within three weeks. Service contract still under negotiation.

Part List

FN-26335
FN-26335/N
FN-31467
FN-32001
GR-345
GR-512
GR-3322
GR-23000
AS-12
AS-13
AS-99
AR-2567
AC/0
AC/0/N
PE-1111
PE-2222
PE-3333
TR-25
TR-2323
TR-561
TR-678
QW-18

Edit

Change Procedure for the 'Invoice Entry Form View:

CRSE (Status=Global) OF
WHEN 1 DO
(Amount=Invoices) = (Amount=Invoices) * (N
Invoices)
WHEN 2 DO
SETNEXTVIEW(New Customer Form)
WHEN 3 DO
(Sales Tax=Invoices) = (Amount=Invoices) *
OTHERWISE

Path: Invoices
Relations: Patrons, Video Inventory
Fields: Invoice #, Date, Sales Tax, Amount, Patrons, Video Inventory
BREAK
CRSE
EXIT
FOR
IF
LOOP
NEXTBROWSE
PERFORM
PRINT
PRIORBROWSE
REPEAT
SETBROWSE
SETNEXTVIEW
USE
WHILE
Clear
Verify
OK
Cancel

ounces the most used by man or mouse.

It's called dBASE® Mac.

And it's the most powerful relational database designed for the Macintosh.™

Especially since, unlike other databases, you can get that power without knowing a thing about programming.



Begin by creating and relating your files.

Not just linking them, but relating them. So when you update one file, all your related files will be updated. Automatically. Immediately.

And remember, with dBASE Mac you can do all this without programming.

With a few clicks of your mouse, you can quickly redesign and rearrange your files to look at your data in any number of ways. Without disrupting it.

And without any programming.

Also using the selection of fonts and MacDraw®-like tools, you can design reports from the very simple to the very sophisticated. Right on the screen. So you'll know how it looks before you print it.

We're not talking about just text and graphics. With dBASE Mac, you can incorporate photos of people, parts and places into your database.

You can even import data from Ashton-Tate's dBASE III PLUS™, dBASE III®, or dBASE II®, as well as ASCII files.

All without programming.

And all with the help of Macintosh's on-screen prompts and pull-down menus.

But if you want to go still deeper, the powerful dBASE Mac programming language will take you into a world of power and capability where no Macintosh has ever gone before.

If you would like a demo disk* for \$4.95,† or the name of the dealer nearest you, call (800) 437-4329, extension 2400.†† You'll see how this Ashton-Tate relational database will make your Macintosh office work smarter.

Whether you are a huge organization.

Or a one-mouse shop.



 ASHTON-TATE

*Hardware requirements: Macintosh Plus, Macintosh SE, Macintosh II with at least 1MB memory. †While supplies last. ††In Colorado, call (303) 799-4900, Extension 2400. Trademarks/owner: dBASE, dBASE II, dBASE III, dBASE III PLUS, Ashton-Tate/Ashton-Tate Corp.; MacDraw/Macintosh/Apple Computer Inc. © 1988 Ashton-Tate Corp. All rights reserved.

Circle 73 on reader service card



Many companies preannounce products for the sole purpose of killing competition.

Which one?

Well, there aren't any out there but ours. And a database manager like Omnis 3 that is years old, tried and true. But I would look at 4th Dimension.

Are there any particularly disastrous products out there?

If I had to pick any disaster, I'd say FullWrite, because of its premature announcement.

Any comments on the ever-growing vaporware problem in the Mac market?

Some of the problems are intentional; some aren't. We slip in product development; Apple slips; other companies slip. But

it's very bad if you announce a product and haven't even started development yet. Back to FullWrite, for example. That was bad—to demo a prototype not far along in development.

Some of our products have been two to three months late. Also, it costs hundreds of thousands of dollars in advertising costs if a product doesn't ship. So it's the last thing we want to have happen.

Many companies preannounce products for the sole purpose of killing competition. Take the competition between Lotus and Microsoft, for example—to keep Excel sales low, Lotus preannounced by one year its spreadsheet product with a graphics interface.

PageMaker was two months late on the Mac. You can't fault things like that, because things come up that you don't expect. The flip side is what Microsoft did with Word 3.0. You can decide to meet a deadline and end up with a bad product. I would rather be late and take the flack.

Now that color for the Mac II is being extended beyond 8 bits, problems with QuickDraw are being reported.

I haven't tested this, but I think that QuickDraw actually only works up to 16 bits. Apple will work on it, but it will take a major repair of the firmware. Apple probably won't change the ROM on Mac IIs, so it will have to ship ROM patches on System disks.

Some third parties, such as Jasmine/RasterOps and SuperMac, have already announced that they have extended QuickDraw through their own techniques.

Well, we could extend or rewrite QuickDraw entirely here at Cricket. But we're real-world. Apple sets the standards. We

(continues)

SIGN ME UP!

The MacAssociation™ is an exciting new world-wide association for Macintosh enthusiasts. As a member, you receive our



Applications

SKILL-CARDS-ADVENTURES-STRATEGY-Games



DA's



Utilities



Fonts



HyperCard

monthly newsletter and program diskette packed full of productive, enjoyable, and useful software featuring Applications, Utilities, DA's, Games, HyperCard Stacks, and more. You also receive tips, tricks, techniques, and easy to follow articles on customizing and optimizing your Macintosh. Your membership fee covers everything, you do not have to pay royalties to the developers of programs (i.e. shareware). Many programs are new and exciting, many are updated versions of

the best software ever published, and many are released to MacAssociation™ members before the general public. Be first in line. Join the rapidly growing MacAssociation™ today.

The MacAssociation

1 Year Membership: 12 Disks + 12 Newsletters - Only \$79

3 Month Trial Membership: 3 disks + 3 Newsletters - Only \$24

100% Money Back Guarantee. Send check or money order today to: The MacAssociation, MacAssociation Building, Box 3462, Rapid City, SD, 57709-3462. For same day service, call 1-605-342-7857 and charge to VISA or MasterCard.

Macintosh and HyperCard are trademarks of Apple Computer, Inc.

We RENT Mac Software !!

1671 Executive Dr.
New Braunfels
Texas 78130
MacStore™
National 800-847-0026

Ask about our frequent renter program!

We'll match any software rental price in this issue.

We have hundreds of other titles available for the Mac. If you don't see what you want - call us!

Accessory Pak 1 or Art Grabber	8.80	Mac Golf	9.10
Accounting Packages	Call	Mac Labeler	8.80
Battery Pak	8.80	Mac Lightning	14.80
Bulk Mailer	18.70	Medical or Legal Dictionary	13.30
Business Filevision	56.25	Mac Mat Book (all volumes 1 - 6)	25.47
Calendar Maker or Certificate Maker	8.80	Mac Publisher & Mac Publisher II	Call
Click Art, Effects, Letters, Publications (each)	8.80	Mac Spell Right or Mac Spell +	13.85
Consultant	28.80	Mac 3 D	31.81
Copy II Mac	8.80	Mac Tracks	8.80
Championship Boxing or Baseball	8.80	Mac the Knife 1, 2, or 3 (Art, Fonts, Ripper)	Call
Cricket Graph	27.90	Max RAM Max PRINT	8.80
Davinci (We have them all!)	Call	Micro Planner Plus	72.00
Dollars and Sense	18.70	More	34.69
Double Helix	60.50	Musicworks or Videoworks	13.19 & 14.15
Excel	52.75	Omnis III Plus	57.12
Filemaker Plus	36.50	OverVue	35.80
Fluent Fonts, Fontastic, Font Explorer, Laser Fonts, SuperFonts, UltraFonts...	Call	Picture Base or Postermaker	8.80
Ferrari Grand Prix or Flight Simulator	8.80	Pinball Construction Set	8.80
Full Paint	13.56	Quick Disk, Quick Word, Quick Paint (each)	8.80
Gato, Orbitor, or Gridwars	8.80	Ready Set Go	Call
Helix	49.50	Smart Alarms	8.90
Infocom games	Call	Super Paint	13.40
LaserSpool	15.16	Tempo	15.36
Keystroke	64.68	Thunderscan	41.60
Kid's Time	8.80	Will Writer	8.80
Languages (Asm, Basic, Z Basic, C, Cobol, Experilisp, Fortran, TML Pascal, etc.)	Call	Write Now or Word Handler	Call
Microsoft Chart, File, Multiplan, Word	Call	Works	37.90
Mac Attack	8.80	Accessories	
Mac Cad	62.56	Cables - we stock most Mac cables	Call
Mac Challenger or Mac Command	8.80	Carrying Cases for all Macs	Call
Mac Draft	33.84	10 Boxed Sony Disks	10.95
Mac Draw	32.47	800k External Drives (double sided)	184.50
		Upgrades & Power Supply Board Repairs	Call
		20 Meg SCSI Hard Disk	695.00

No membership fee • 16 day rentals • Rental applies to purchase



The store logo is a trademark of MacStore, Inc., the apple logo a trademark of Apple Comp. Inc.

In Texas 800-222-1537

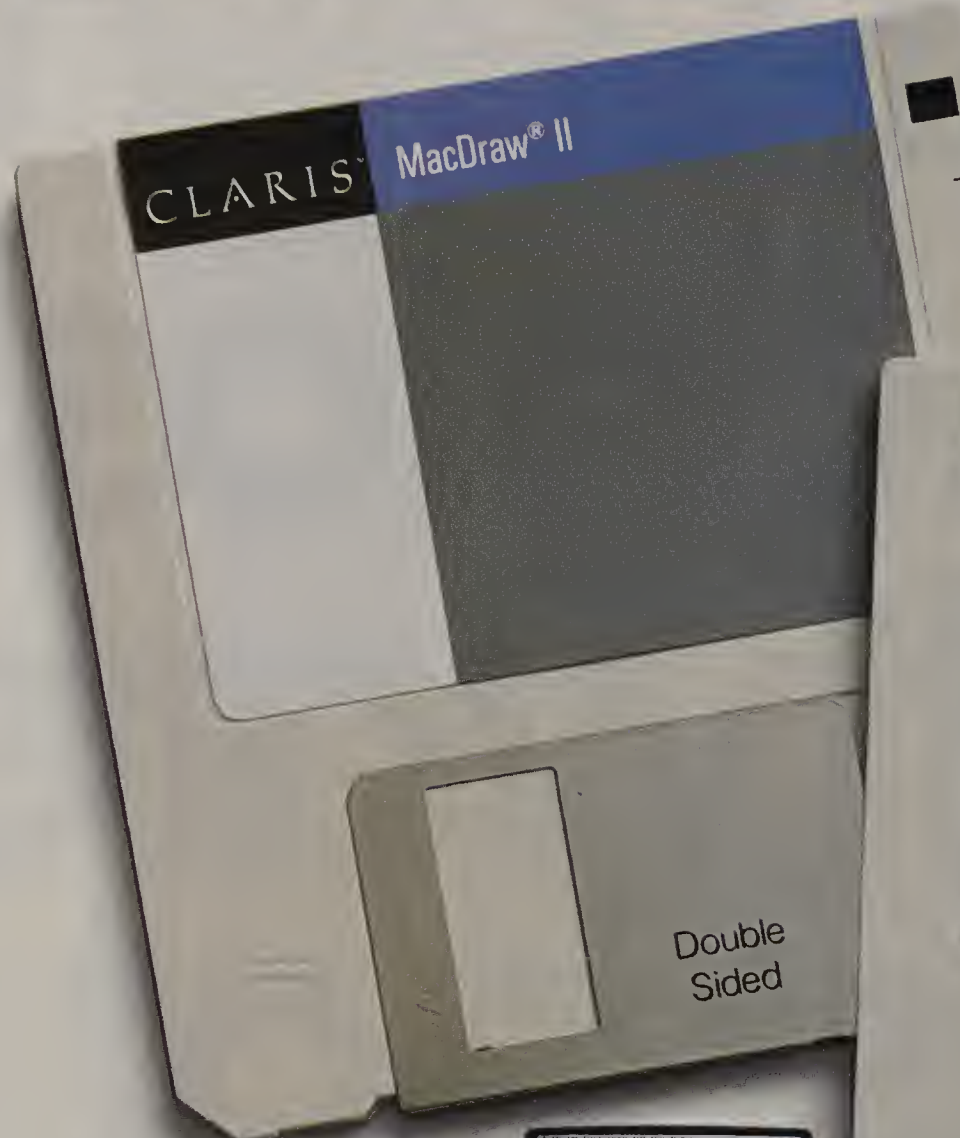
After tone ask operator for extension 993265

or dial direct 512-629-5419

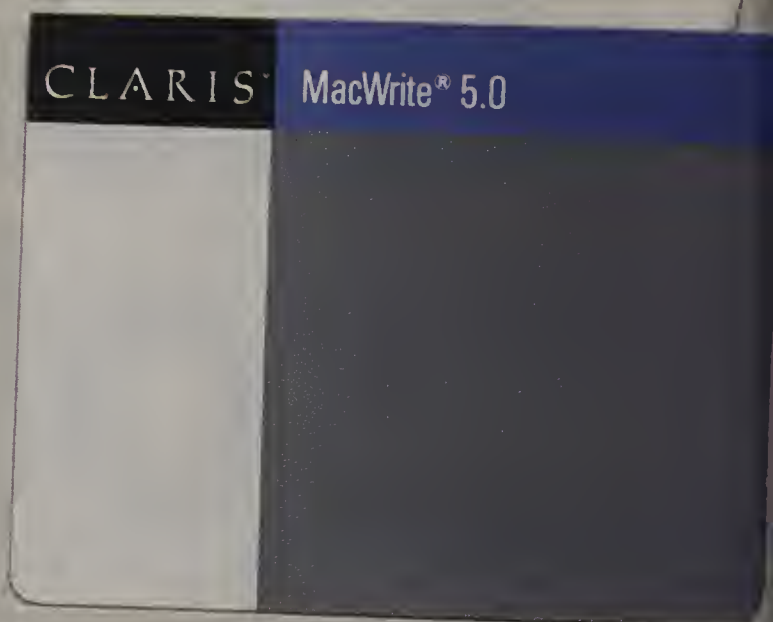


**The
best-selling
Macintosh
software
just got
the ultimate
upgrade.**

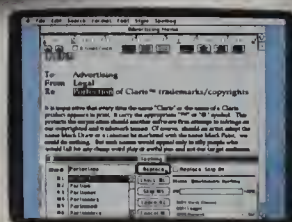
Its own



MacDraw® II: The professional standard for graphics made more professional with spectacular color, zooming, layering, plus more flexibility, precision and speed.



MacWrite® 5.0. The most popular, easy-to-use Macintosh word processor, now with a 100,000 word dictionary and built-in spelling checker.



Double
Sided

Presenting Claris™ 1.0. We used to be a part of Apple® Computer. Now we're on our own.

New stationery. New phones. New offices. The whole bit. And here we are, while the halls are still filled with the scent of new carpet, introducing more powerful versions of the most popular Macintosh® software of all time.

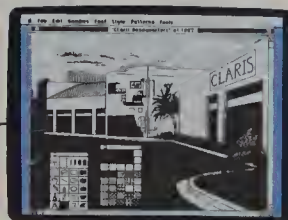
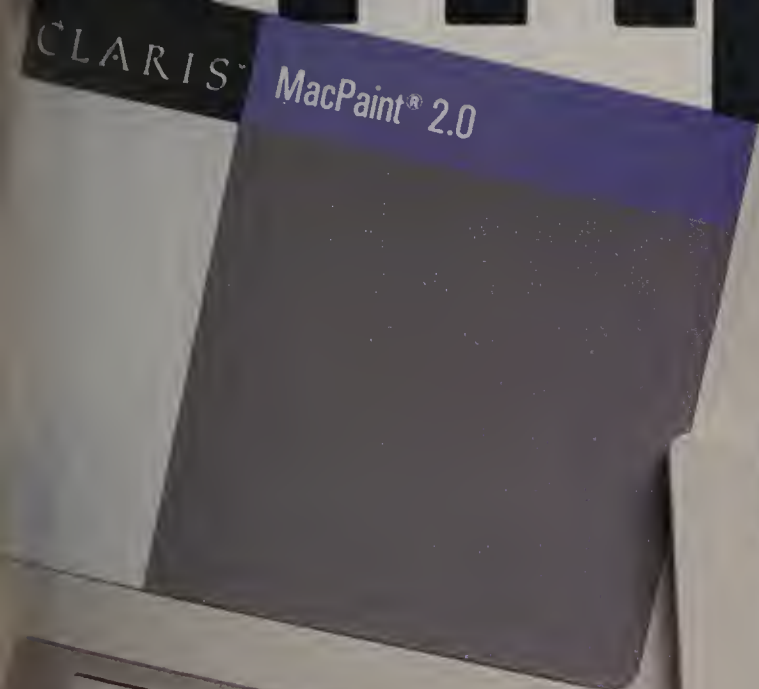
MacDraw, the desktop publishing standard for professional graphics, completely overhauled as MacDraw II. It's faster, more

flexible and precise. With new features like zooming and layering. And on the Macintosh II your basic breathtaking color.

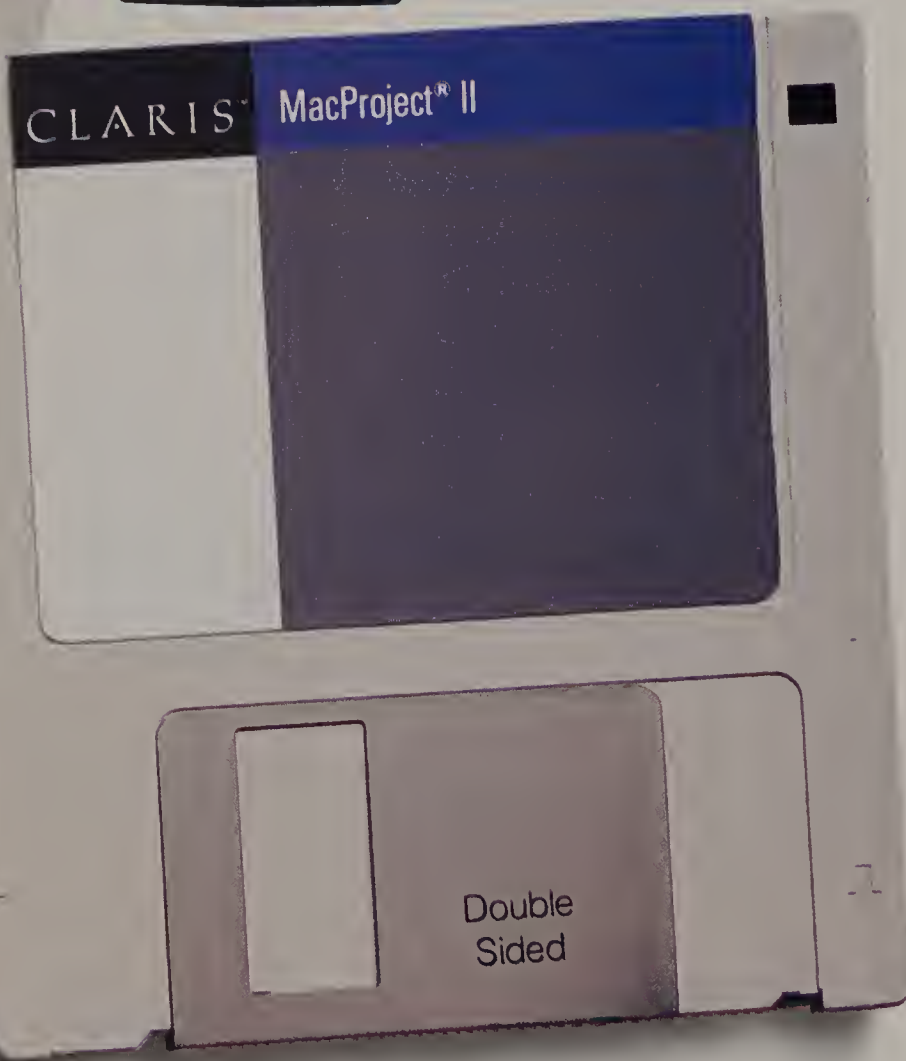
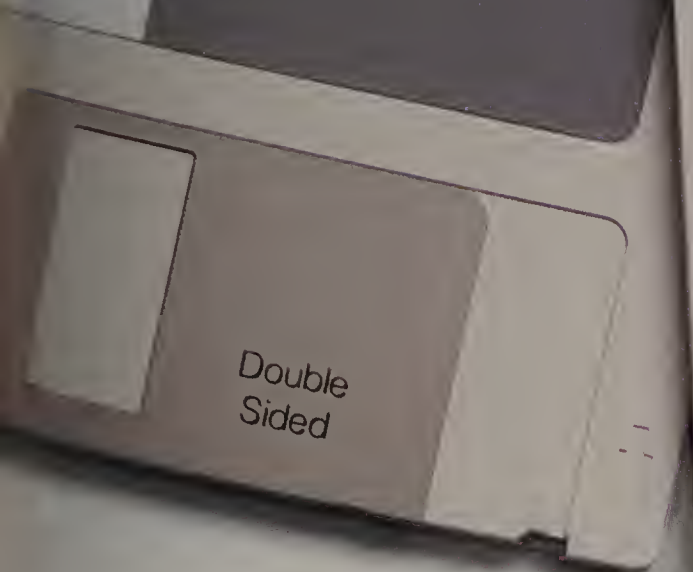
MacWrite, the most popular Macintosh word processor of all time, now includes features like a built-in spelling checker, a 100,000 word dictionary and an abundance of new optional keyboard commands.

MacPaint, the illustration program that's inspired nearly as many imitators as the Mona

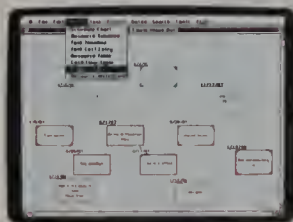
Company.



MacPaint® 2.0 A bigger work area, tear off menus, templates, snapshot windows and the "magic eraser" make your artwork more art and less work.



MacProject® II. This cartographer of success precisely allocates time, links sub projects, then tracks the most complex projects from start to finish.



Lisa, now exhibits a larger work area. Tear-off menus. Zoom. Templates. Auto-scrolling. And nine snapshot windows. All designed to make artwork more art and less work.

Finally, MacProject II, a full-power, professional-level project manager that can generate tables, PERT charts, Gantt charts, histograms and applause in presentations.

If you thought it was good in black & white, wait until you see it in color. For the whole

scoop, dial our upgrade hotline: (800) 544-8554.

But here's where it gets really exciting.

Coming soon to a Macintosh near you: new and innovative Claris applications that make the most of the Mac's graphic, intuitive approach to computing. Case-in-point: SmartForms™. The quick and inexpensive way to design and manage professional-looking business forms. So there you have it. Claris has arrived. Stay tuned.

CLARIS

For more information or the location of the nearest Claris dealer, call toll-free (800) 334-3535. For more information in Canada call toll-free (800) 668-8948.

Color Questions? Color Solutions

Modern Artist®



Modern Artist Color Paint program meets the need of the professional artist while its unmatched ease of use is ideal for business or educational color graphics. 5.5 million colors are available simultaneously along with a wealth of special effects, such as 3-D shading with positionable light source, custom brushes, finger painting with wet canvas, air brushes and much, much more. More features than any competition at less than half the price, only \$199.00.



The PanChroma™ CHC-335 200 dpi desktop color printer gives you superb color prints on paper or directly on overhead transparency. The PanChroma design is simple and reliable and the 1000 colors available are brilliant. You can print files from our Modern Artist color paint program or from other PICT files, \$500.00. "B" size model available.

Trademarks: Macintosh II: Apple Computer

TV Producer®



TV-Producer, professional graphic overlay board for the Macintosh II. Desktop video at your fingertips to create business, technical, promotional video presentations. TV-Producer's selectable chroma-key and gen-lock capabilities can also be used in broadcast production applications to merge graphics with a video source for special effects and computer generated animation. No extra memory required. Extremely simple operation. TV-Producer is installed and used as a desk accessory. \$599.00, RGB, broadcast and PAL options available.

**ORDER TOLL FREE
1 800 547-3303**

**Computer
Friends®**

14250 NW Science Park Dr.
Portland, Oregon 97229

tel (503) 626-2291, fax (503) 643-5379 tlx, 4949559 CF.

BUICK

Road test a Buick in your home.

Send us this card and we'll rush you a free copy of Buick's new "Dimension" program to run on your 512K Apple Macintosh, as well as IBM PC or compatible with CGA. Offer good while supply lasts. Please allow 3-4 weeks for delivery.

Name _____
(please print or type)

Address _____ Apt. _____

City _____

State _____ Zip _____

Area Code _____ Phone Number _____

Disk ordered:

(Check one please)

☐ IBM PC (5 1/4")

☐ Macintosh 400K disk

☐ Macintosh 800K disk

Vehicle presently owned:

Buick ☐ Olds ☐ Chevy ☐ Other GM ☐

Ford ☐ Mercury ☐ Lincoln ☐

Dodge ☐ Plymouth ☐ Chrysler ☐

Japanese Import ☐ European Import ☐

Vehicle year: 19_____

D

Intend to purchase within: 3 months ☐ 6 months ☐ 12 months ☐



The Great American Road belongs to Buick.



Apple and Macintosh are registered trademarks of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corp.



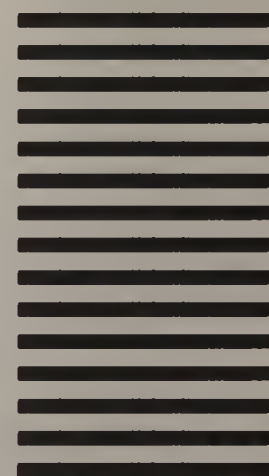
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 28301 DETROIT, MICHIGAN

POSTAGE WILL BE PAID BY ADDRESSEE

Buick Distribution Center
C/O ADCOM, Incorporated
6845 Dix Street
Detroit, Michigan 48209-9990



Road test a Buick in your home.



It's actually possible with Buick Dimension, a free home computer program in disk format that contains all the facts and figures on the exciting line of new 1988 Buicks.

Get your first glimpse of Reatta, Buick's luxury 2-seater car. Find out about the totally new Buick Regal with seating for six.

There are illustrations with amazing graphics that move;

complete specifications; option packages and standard equipment and pricing information.

Using Buick Dimension is easy. All it requires is a 512K Apple Macintosh; or IBM PC, XT, AT (or compatible) with 512K RAM memory and CGA. You can print hard copies of your own personalized spreadsheet and price sticker.

To get your free copy, fill out

the business reply card or write to Buick Distribution Center, C/O ADCOM, 6845 Dix Street, Detroit, Michigan 48209-9990. Indicate Macintosh 400K or 800K disk, or IBM. Offer good while supply lasts.

BUICK
U S A
OFFICIAL CAR OF THE 1988 U.S. OLYMPIC TEAM

GM

The Great American Road belongs to Buick.



Apple and Macintosh are registered trademarks of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corp.

PRESS YOUR EXCEL ADVANTAGE TO THE LIMIT.

Introducing MacSQZ!™ for Microsoft® Excel. MacSQZ!, a combination desk accessory and application, makes Excel even better by making spreadsheets smaller and safer. Smaller because MacSQZ! shrinks the size of your spreadsheets on disk by as much as 95%. Automatically, as you use Excel. You get 95% more use from your disk space. With almost 0% effort. Safer because MacSQZ! adds effortless backup and file-level password protection to Excel. It also shows a history of spreadsheet changes and lets you see which spreadsheets are linked together. With MacSQZ! your numbers are safe and secure, and better documented. It helps Excel work harder, so your work is easier.

For only \$79.95, MacSQZ! is the small wonder that gives Excel users a bigger advantage. See your dealer, or call for info or to order with a 30-day money-back guarantee. Excel more with less. With MacSQZ!.

(800) 888-0886 Ex. 751G

M A C
SQZ!

A Better Way To Excel.

SYMANTEC™
Turner Hall Publishing Division
10201 Torre Avenue
Cupertino CA 95014 (408) 253-9600.

EXCEL IS
COMPACT,
SAFE,
SECURE
AND BETTER
DOCUMENTED
WITH
MACSQZ!
FOR ONLY
\$79.95.

SAVE UP TO
95% ON DISK
SPACE,
BACKUP TIME
AND COMMU-
NICATIONS
COSTS. ADD
PASSWORD
PRIVACY,
HISTORY,
AND MORE.

Verbatim



I'm leery of putting QuickDraw extensions into a program that would compromise data interchange.

won't develop applications based on other third-party developers' work.

Sure, as a developer I can use any extensions that I can think up. But can I then record the data as a PICT file? Can I paste the drawing into the Clipboard and then paste it into MacWrite? I'm leery of putting extensions into a program that would compromise data interchange.

There is a growing sense that Apple's tight control of its programming environment is beginning to weaken; what do you think?

There are two examples of industry-standard file formats that Apple has had little or no input on: EPS [encapsulated PostScript] and TIFF [tagged-image file format]. Already there are problems. EPS files have holes, and the format was unneeded. It also conflicts in some areas with QuickDraw. TIFF is an Aldus-instigated file structure for imaging. It is so flexible that it has almost no limits. But everyone who knows the specifications of the format interprets them in a different way. So all of the scanner companies have different TIFF formats. To be able to read files in all of these different formats, my programs would have to have about 400K of code. It's simply too flexible. It's a classic case of overengineering. TIFF would be good if there were three variations: color, black-and-white, and gray-scale. But no company or organization should be allowed to modify or extend the format as it wants. For those of us developing programs, trying to read TIFF files has become a real problem.

Adobe has announced that it will extend PostScript to act as a display language for the Mac II. Any comments?

Let's ask whether this should be done, and not whether we want to see PostScript as a display language. Now PostScript is a LaserWriter driver; it's slow and not suited to interactive graphics. So if you develop PostScript to run as a screen driver, if it is

entirely rewritten to make it faster and to give it this capability, is it still PostScript?

If Apple doesn't endorse it on the Mac, it's not an important question for me anyway. If Apple won't support PostScript in its imaging model, I won't use it.

John Sculley, at a recent financial analysts' meeting, suggested that Apple is preparing to rewrite the Mac operating system.

Everyone knew that Apple would have to do this. The Mac OS is like all other operating systems. It would be like us admitting that at some point we had to rewrite Cricket Graph from the ground up. We couldn't fix it anymore. Yes, you can make changes in the Mac OS graphics, and that's important, but eventually you can't take care of all of the problems.

What are the implications for the end user?

I'll quote Jean-Louis Gassée on that. The users should see no difference. It won't affect them. It will have a new functionality that they will learn to use, but from their viewpoint, no difference.

And the likelihood of Mac clones, from your perspective?

Based on prior history, I doubt it. It all depends upon use of the Mac ROM routines, and if another company does use them, Apple's legal department will be there to take care of it. Apple has copyrights and patents on different aspects of the ROM.

There will truly be a clone only if some big company makes an agreement with Apple about the ROM. Sharp has a computer in Japan that has some of the Mac interface features—Trash Can, windows, and so on—but it won't run Mac software. □

Interviewed by Jerry Borrell

Circle 248 on reader service card

See us at booth #3602
COMDEX/Spring '88
May 9-12, 1988
Atlanta Apparel Mart
Atlanta, GA

SCSI POWER

We've Got it From 20 Megabytes to 1.2 Gigabytes

SCSI Hard Disk Subsystems for the Macintosh Plus, SE or II

- "MacStack Series" - 20, 43, 60, 80, 102, 140 MB
- "TapeStack" - 60 MB Streaming Tape Backup
- "Compact Series" - 20, 40, 45, 100 MB
- "PRO-SE Internal Series" - 20, 40, 45, 100 MB
- "PRO-II Internal Series" - 20, 43, 60, 80, 102, 140, 150, 300 MB
- "Expandable Series" - 150 MB to 1.2 GB with Tape
- "DEC" Mass Storage Systems to 2.4 GB



Call today for the name and number
of your nearest CMS dealer.

CMS Enhancements, Inc.
1372 Valencia Avenue • Tustin, CA 92680
Telephone: (714) 259-9555
Telex (023) 371-8711 • FAX (714) 549-4004

Macintosh is a registered trademark of Apple Computer, Inc.
CMS logo is a registered trademark of CMS Enhancements, Inc.
DEC is a registered trademark of Digital Equipment Corporation.



It's the highest achievement to be both beautiful and

In the field of nature, the design skills of the hen and the spider have rightfully earned universal acclaim.

In the field of desktop publishing software, the same credentials apply to Letraset, leaders in graphic design for nearly 30 years.

And now Letraset proudly introduces its most recent achievement: Ready Set Go! 4.0™ page layout software for the Macintosh™ embodying

the perfect balance of desktop publishing beauty and productivity.

For the artist in you, RSG! 4.0 offers innovative design features that allow you to produce pages that are excitingly creative.

Including automatic run-arounds that make it easy to create extraordinary visual effects. An elegant new tool bar that keeps your tool boxes accessible to each docu-

ment you're creating. Powerful snap-to design grids that help you interactively place text and graphics and visualize designs as you go. Facing pages that allow you to view, edit and lay out a two-page spread. "Lock-and-Don't-Print" features that let you produce multiple pages for color overlays. And over 50 fill-and-pen patterns, based on Letraset's popular collection of rules and borders,



evement of great design d functional.

to create a variety of special graphics.

The practical side of you will be pleased to learn that RSG! 4.0 is also packed with a wide array of powerful time and effort saving production features.

For example, RSG! 4.0 comes equipped with full-function word processing and a built-in 100,000-word spell checker that can suggest correct spelling alternatives. Style

throughout a one-page layout or an extensive multi-page document with a single keystroke. A linker tool that allows text to flow automatically as new text or graphics are needed. And RSG! 4.0 even boasts tabloid-size page formats up to a generous 99x99 inches.

In other words, RSG! 4.0 is the first page layout software of its kind. A tool for those who recognize that

sheets that let you make formatted changes

great design is the product not only of powerful creative resources, but of a genius for efficient production.

Any authorized Letraset graphic design software dealer will be glad to illustrate the above with a Ready Set Go! 4.0 demonstration. For the name of the dealer nearest you, just call (800)722-0377.

Letraset[®]
✶ ESSELTE

Communication by design.

Copyright 1987 Letraset USA. Ready Set Go! 4.0 is a trademark of Manhattan Graphics, Inc. Macintosh is a trademark of Apple Computer, Inc.

Circle 598 on reader service card

QUICKMAIL™ THE NEW GENERATION ELECTRONIC MAIL PROGRAM FROM CE SOFTWARE.

FASTER, EASIER, MORE POWERFUL AND LESS EXPENSIVE.



There's something new available
in electronic mail: Ease. Speed.
Versatility. Real world feel.
QuickMail™!
The first complete mail program!

Whether you only have a few
computers connected to a
LaserWriter™ or hundreds with file
servers and gateways... QuickMail,
by itself, can make your office
more productive.

Conferencing.
Connectivity.
Compatibility.
Adaptability.

QuickMail has it all.
Yet...like Macintosh®, QuickMail's
sophisticated design is intuitive.
It's a breeze.

"One of the hottest new E-mail
products was previewed last month at
the MacWorld Expo in San Francisco.
The program, temporarily named
Project X, is from CE Software..."
— *Macintosh Today*, February 23, 1988

Suggested Retail: \$300 per 10 users.
MS-DOS Version Available This
Summer.
Contact your local dealer to schedule a
demonstration.



QUICKMAIL™
THE NEW GENERATION ELECTRONIC MAIL PROGRAM

Circle 130 on reader service card

QUICKEYS™

The keyboard enhancer for your Macintosh
For: Macintosh 512E, Plus, SE and II. This award winning program works with all keyboards, especially extended keyboards.

You told us macro programs were complicated, hard to learn and unreliable. We agreed. So, we wrote QuicKeys.

How fast can you learn to use QuicKeys?
How fast did you read this sentence?

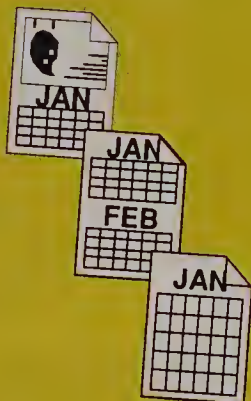
All basic actions: opening programs, clicking and dragging, typing text, selecting menu items, buttons, sequencing actions and many more are condensed within a compact menu.

Virtually anything you can do with your Macintosh is done with a keystroke in QuicKeys. It even prints keyboard templates! **★★★★ MacUser-Jan '88**
Just \$99.95

Simply select an action from this menu, press a key and... Bingo! You're creating QuicKeys.

CalendarMaker™

Presentation quality calendars.
"If you use calendars, you need CalendarMaker"
- Nibble Mac, October 1987



"Every year I have the same problem: finding the ideal calendar... In answer to this universal dilemma CE Software has published CalendarMaker." **MacWorld, March, 1987**

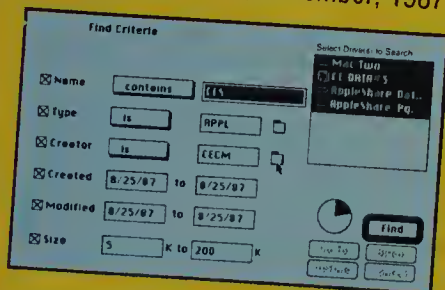
★★★★ MacUser-Dec. '86

Enter events manually or import from programs including: MORE!™, SideKick™, BatteryPak™, SmartAlarms™. Export calendars to MacWrite, MacPaint, MacDraw, PageMaker and others... Just \$49.95

DiskTop™

A portable finder.

"DiskTop may well be the best desk accessory I've ever owned; I use it more than any other... this may be the best value in Macintosh software today."
The MACazine, November, 1987



★★★★ MacUser-Aug. '87

With DiskTop you can find, copy, move, rename, create folders, and more without ever leaving the document you're working in.

DiskTop contains the most powerful yet easy to use "Find" command available on the Macintosh. Hard drive users love it. Just \$49.95

CE SOFTWARE

CalendarMaker, DiskTop and QuicKeys are trademarks of CE Software. Other names indicated by ™ or ® are trademarks of their respective manufacturers.

**QUICKEYS
1987 EDDY
AWARD WINNER**



Visit your retailer or call (800) 5-CESOFT for VISA/MasterCard orders. To purchase by mail send VISA/MasterCard number with expiration date, check or money order with appropriate amount plus \$2.00 shipping and handling for each product ordered to CE Software, P.O. Box 65580, West Des Moines, Iowa 50265. For information call (515) 224-1995.

When you want to talk Macintosh

MONITORS

Network Specialties	
High Top Full Page Display	1099.00
Flat Top LCD	NEW
Nuvotech	
Easyview 14" Monitor	319.00
Power R	
MacLarger 12" Monitor	369.00
Radius	
Full Page Display Plus	1499.00
Full Page Display SE	1599.00
Two Page Display	2199.00



NETWORK SPECIALTIES
Big Top Tilt/Swivel \$1549

Sigma Designs

Laserview 19" SE	1849.00
Laserview II 19"	1889.00

MODEMS

Everex

EMAC MD 2400	249.00
--------------------	--------

DRIVES WITH TAPE BACKUP

Everex

EMAC 40/60	2299.00
EMAC 20/60	1699.00
EMAC 91/60	2699.00

Mirror Technologies

Magnet 40/40	1799.00
Magnet 85X	2599.00

FLOPPY DRIVES

Cutting Edge

800K External	189.00
---------------------	--------

Mirror Technologies

Magnum 800	209.00
------------------	--------

HARD DRIVES

CMS

Pro-20 SE/i 85 ms	559.00
Pro-40 SE/i 29 ms	899.00
Pro 20 II/i 65 ms	489.00
Pro 43 II/i 40 ms	699.00
Pro 60 II/i 40 ms	779.00
Pro 80 II/i 26 ms	1299.00
Pro 102 II/i 28 ms	1299.00
Pro 140 II/i 28 ms	1799.00
Pro 150 II/i 28 ms	2099.00
MacStack 20	599.00
MacStack 43 40 ms	849.00
MacStack 60 40 ms	899.00
MacStack 80 26 ms	1399.00
MacStack 140 28 ms	1899.00

Everex

EMAC 20D	599.00
EMAC 91D	1499.00

Mountain

20MB with SCSI	899.00
40MB with SCSI	1499.00
80MB with SCSI	2599.00
80MB Fixed/20 Removable	3499.00
140MB with SCSI	3499.00
140MB Hard w/SCSI	3499.00

PCPC

MacBottom HD21	859.00
MacBottom HD21M	999.00
MacBottom HD32	999.00
MacBottom HD32M	1199.00
MacBottom HD45	1399.00
MacBottom HD45M	1499.00



EVEREX
EMAC 40D \$999

DIGITIZERS/SCANNERS

AST

Turbo Scan	1399.00
------------------	---------

Koala

MacVision 300 DPI	179.00
-------------------------	--------

TAPE BACKUP

AST

AST 2000	1499.00
AST 4000	3999.00

CMS

Tapestack 60	799.00
--------------------	--------



EVEREX
EMAC 60T \$999

Mountain

20MB Dual Removable	1899.00
20MB Removable Bernoulli	1499.00
40MB 20/Removable Bernoulli	2699.00
80MB Fixed/20 Removable	3499.00
140MB Hard w/SCSI	3499.00

UPGRADE

Dove Computer

MacSnap 524	155.00
MacSnap 524E	139.00
MacSnap 524S	189.00
MacSnap 548	359.00
MacSnap 548E	349.00
MacSnap 548S	429.00
MacSnap Plus 2	269.00
MacSnap Plus 2H	459.00
MacSnap 2S	469.00
MacSnap 4S	929.00
Tool Kit	16.99

MacMemory

E Machines Adaptor Kit	119.00
Multisimms 2MB	Call
Turbo Drive 40 SCSI	1599.00
Turbo SE	369.00
Maxplus Mega 2MB	349.00
Maxram/Maxprint	35.99
68881 Math Co-processor	349.00

To Mac users,
 we are the
 new kid on
 the block.
 To more
 than 400,000
 satisfied PC
 customers, we're
 an old friend.



Call now for
 fast, friendly
 service on
 the widest
 selection of
 Mac hardware
 and peripherals.

.....you want to talk to us.

SOFTWARE

Aegis Development	
Doug Clapps Word Tools	45.00
Affinity	
Tempo	55.00
Ann Arbor Softworks	
Full Write Prof.	169.00
Full Paint	54.00
Ashton Tate	
dBase Mac	299.00
Berkley Systems Design	
Stepping Out	57.00
Brainpower	
Stateview 512 Plus	199.00
Broderbund	
Print Shop	37.00
Cricket	
Cricket Graph	119.00
Cricket Draw	169.00
Data Viz	
MacLink Plus with cable	129.00
Deneba	
Coach	69.00
Coach Professional	139.00
Coach Thesaurus	45.00
Comment 1.1	69.00
Canvas	139.00
5th Generation	
Fast Back	79.00
Firebird Liscenses	
Laser Author	119.00



DATA TAYLOR
Trapeze **\$159**

Infosphere	
Intermail 7 Users	259.00
Innovative Data Design	
MacDraft	155.00
Letra Set	
Ready—Set—Go	289.00

SOFTWARE

Lundeen & Associates	
Works & Spell	55.00
Microsoft	
Works	189.00
Word	259.00
Write	139.00
File 1.05	129.00
Excel	249.00
Power Point	269.00
Migent	
In-House Accountant	99.00
Neshoba	
Filemaker Plus	179.00
Survivor	
MacMoney	54.00



NESHOBA
Filemaker Plus **\$179**

Silicone Beach	
Silicon Press	49.00
Software Discoveries	
Merge Write	33.00
Software Power Company	
Power Up	39.00
Software Supply	
Suitcase	45.00
SuperMac Software	
Super Laser Spool	89.00
Disk Fit	49.00
Sentinel	99.00
Symetry	
Acta V 2.0	39.00
T/Maker	
Target Scoop	289.00

ACCESSORIES

Allsop	
Disk file 10 Holds 10 3 1/2" Disks	3.99
Disk File 30 Holds 30 3 1/2" Disks	9.99
Cleaning Kit for 3 1/2" Disks	15.99
Curtis	
3 Outlet, Duplex/Filter	48.00
6 Outlet, 6' Cord/Filter	48.00
6 Outlet, 6' Cord/Duplex	29.00
6 Outlet, Duplex/Wall	49.00
Power Conditioner	169.00
Kalmar Designs	
Teakwood Disk Cabinet for 3 1/2"	13.99
Kensington	
Turbo Mouse	77.00
Turbo Mouse ADB	77.00
System Saver	63.00
Tilt/Swivel	21.00
Disk Drive Cleaning Kit	19.00
Microcomputer Accessories, Inc.	
macIntosh Valet	109.00
PTI/Datashield	
S-85 /Surge Protector	59.00
S-100 Surge Protector	69.00
Power Center 5 Switched outlets ...	89.00
Power Center Modem Protection ..	119.00
Turbo Backup 300 VA	399.00
Turbo Backup 450 VA	429.00

DISKS



SONY 3 1/2"
DS/DD Disks **\$1799**

Maxell	
Maxell 3 1/2" DS/DD	18.99
Maxell 3 1/2" SS/DD	12.99
Sony	
Sony 3 1/2" SS/DD	12.99



MacCenter

In the U.S.A. and in Canada

Call toll-free: 1-800-233-8950

Outside the U.S.A. call 717-327-9575, Fax 717-327-1217

Educational, Governmental and Corporate Organizations call toll-free 1-800-221-4283

CMO. 477 East Third Street, Dept. N1, Williamsport, PA 17701

ALL MAJOR CREDIT CARDS ACCEPTED

POLICY: Add 3% (minimum \$7.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery, use your credit card or send cashier's check or bank money order. Credit cards are not charged until we ship. Pennsylvania residents add 6% sales tax. All prices are U.S.A. prices and are subject to change, and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee.

PhoneNET[®] Puts Backbone Into AppleTalk[®] And Lets You Connect To The Stars.

AppleTalk is a registered trademark of Apple Computer, Inc. PhoneNET is a registered trademark, and PhoneNET System, PhoneNET StarController, PhoneNET CheckNET, StarCommand and TrafficWatch are trademarks of Farallon Computing, Inc.
©1988 Farallon Computing, Inc.

What if you could add the power, reliability, and flexibility of backbone and star topologies to your AppleTalk local area network?

What if you could do it inexpensively—running the network on your existing telephone wires? What if you could expand your LAN throughout your entire installation—link rooms, floors—even buildings? What if you could add work-stations, printers, and other devices as easily as you plug a phone into a wall jack?

You can.

The PhoneNET System™ makes it easy and inexpensive to link Macintoshes, PCs, VAXes, and peripherals throughout an organization. Run on an available pair of telephone wires, PhoneNET builds networks that users can plug into at will. And when it's time to move people and equipment around, your network is already wired for action.

PhoneNET supports daisy chains, backbones, and stars. Add a PhoneNET StarController™ and reconfigure your network into an active star—increasing network size and degree of management control. StarControllers, wired right into your building's central telephone closet, make it possible to include floors and buildings in a local area network. Link StarController to StarController and create networks that keep going.

On. And on. And on.



Control all this power from your desk. StarController comes with StarCommand™ and PhoneNET Manager™; sophisticated network management, testing and fault isolation software.

Use these programs in conjunction with PhoneNET CheckNET™ and TrafficWatch™ for complete network troubleshooting, monitoring, management and planning.

Call or write Farallon Computing for more information about the PhoneNET System.

Reach the stars.



farallon
computing

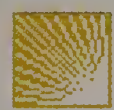
2150 Kittredge Street, Berkeley, California 94704.
415 849.2331 Fax 415 841.5770

Circle 150 on reader service card

Macworld News

by Gil Davis

Color SE



Hurray, a color Mac SE is here...but not from Apple. Instead, Orchid Technology is offering a ColorVue video card that plugs into the SE's expansion slot. Attach a standard color multisync monitor, insert a color program, and voilà...your SE is colorized.

But instead of the Mac II's 256 colors, the ColorVue card can manage only 16 colors. That doesn't mean it isn't highly useful; it's compatible with all software that can print color on the ImageWriter II and the LQ—including Cricket Draw, Cricket Graph, Cricket Presents, More, Quark XPress, Canvas, MacDraw 2.0, Modern Artist, Videoworks, and SuperPaint. It also allows printing in color with Hewlett-Packard's Paint Jet.

ColorVue's list price is \$695, about the same as the Apple-Color video board for the Mac II with expanded video memory. Within a few months, says Orchid, both its board and a multisync monitor should be available for less than \$1000.

Price will be important to ColorVue's future because customers will be comparing it with a Mac II color monitor. In comparison to the SE, the ColorVue's screen drawing is slow because it must refresh the screen in three separate passes, one for red, one for green, and one for blue. In monochrome mode, the screen-refresh rate on the auxiliary monitor is about the same as the SE's own screen's.



MARK JOHANN

Color comes to the Macintosh SE, with a ColorVue video card from Orchid Technology that allows the SE to display up to 16 different hues simultaneously.

Planned upgrades include simultaneous utilization of both screens (currently, using the color screen precludes working on the Mac screen), speeding up the screen redraw with a Motorola 68020 processor, and supporting monitors of up to 1024 by 768 pixels.

The implications of this product may be as important as the product itself. Orchid Technology claims to have been communicating with Apple throughout development, and Apple reportedly has indicated that there will be a window for Orchid's product throughout 1988. From this, one might assume that Apple will not re-

lease a less-expensive color Mac this year, neither a color version of the Mac SE nor a smaller version of the Mac II.
—Scott Beamer

Color's Missing Link



Despite all the recent talk of desktop presentations, it's been impossible to get high-resolution color slides without compromising convenience, cost, or compatibility. Until recently, you had to spend over \$10,000

for a film recorder or rely on an outside production service.

One film recorder, the ImageMaker from Presentation Technologies, provides fairly high resolution for around \$5000, but it can't use all the Mac's fonts or make slides with complex graphics. The Film Printer, a new 16-pound film recorder from Mirus, makes high-resolution color slides from Mac images for under \$6000. Mirus has been able to keep this price down by using a custom design for most of its components.

The Film Printer produces color slides with up to 8000-

(continues)

Trade-up to VideoWorks II for \$100. See below for details.

Desktop *Animated* Presentations

Present your charts, graphics and reports with animation and music.

Now you can produce full-color presentations that move. And that move your audience.

Animation adds power and persuasiveness to any presentation, whether it's next year's business plan or today's lesson plan.

New VideoWorks II makes it easier than ever to animate your shows...and your viewers. For beginners, an Overview window simplifies the work of creating presentations; that can include animation, wipes, fades, dissolves...24 different transitions in all.

Plus comprehensive timing options, sound effects, music...and the excitement of color. VideoWorks II works great with the Macintosh II (in either 16 or 256 colors) or the 512, Plus, or SE.

Create animated presentations without being an artist.

The VideoWorks II package comes with its own library of ready to use pre-created artwork, movies and "clip animation" (e.g. flags waving, a cannon firing). In addition you can take images from PICT, MacPaint, Glue or other sources and animate anything from a business presentation to a rock video. (You can also use VideoWorks II for your *nonanimated* slide shows.)

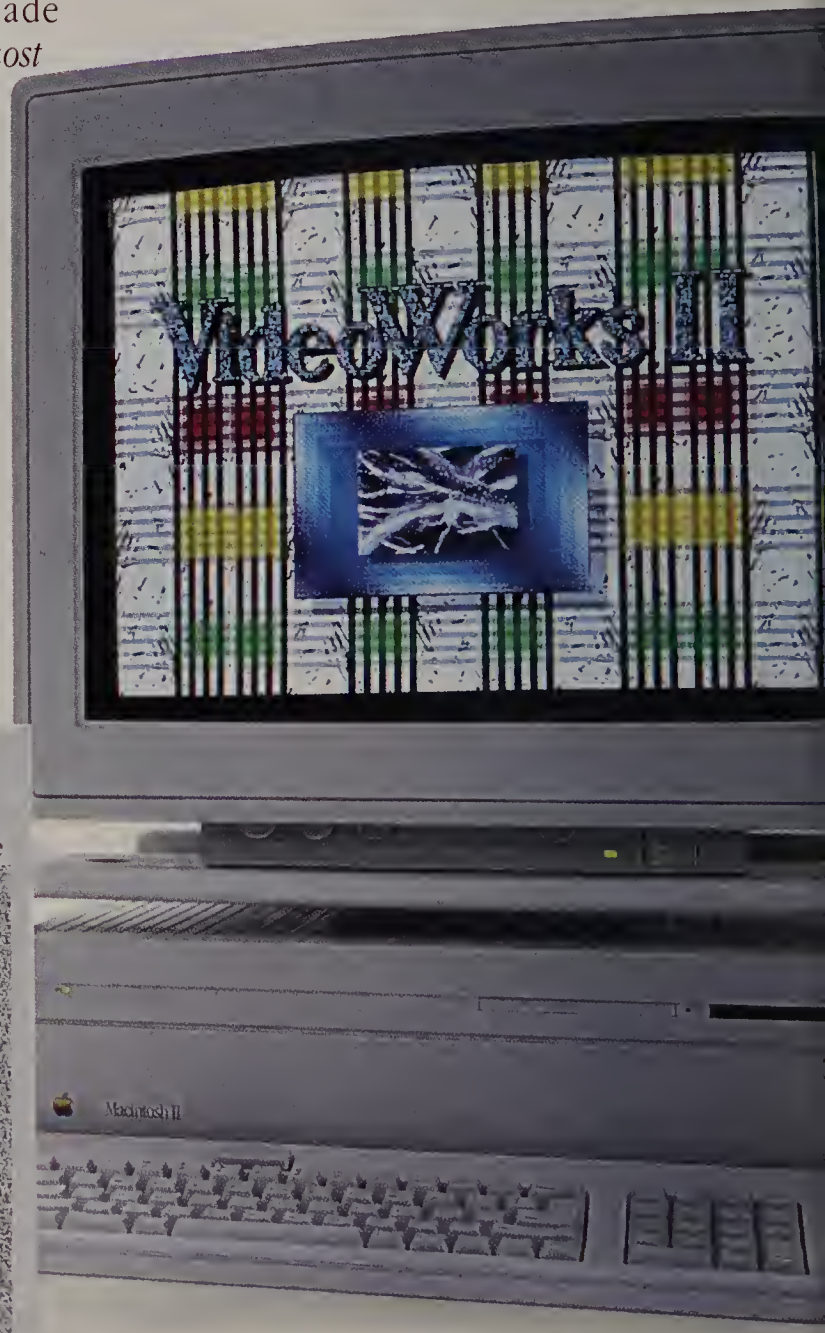
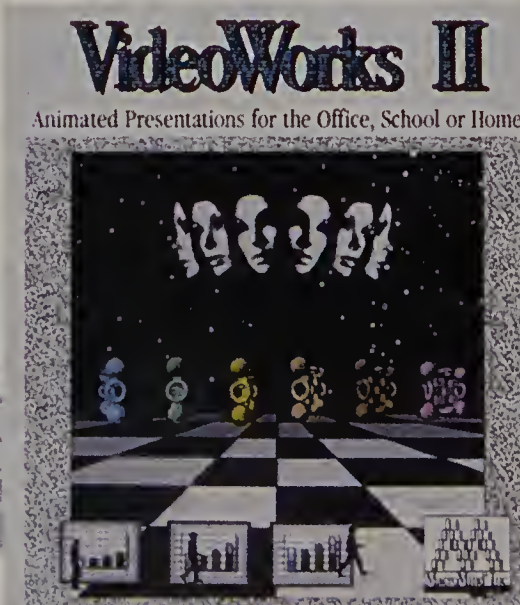
The original VideoWorks made history. (*MacUser* called it "the most innovative program of the year." Disney Animator Frank Thomas said it was, "the best program I ever used.")

Now, VideoWorks II is so improved it's virtually a whole new program. It gives you more than just graphics, it makes your presentations come alive! See it at your local software dealer.

Suggested retail price: \$195.

Ideal for:

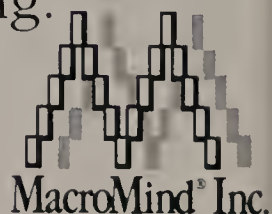
- **Business Presentations**
- **Animated Slide shows**
- **Multi-Media Storyboards**
- **Educational Courseware**
- **Scientific Motion Studies**
- **Point-of-Purchase displays**
- ... and just having fun.**



MacroMind, Inc. 1028 W. Wolfram St. Chicago, Il. 60657 (312) 871-0987
To trade up send \$100, your original Movies disk and \$7.50 for shipping.

Comes with three 3.5" disks (800k each): the Program, Clip Animation, Artwork and Movies; and a Guided Tour training disk. Not Copy Protected. *Clip Animations™*, *Clip Charts™*, *Clip Sounds™*, *Movies*, the *VideoWorks II™* Hypercard Driver and *VideoWorks II™* Compiler disks are also available.

VideoWorks II, Clip Charts, Clip Sounds and Clip Animations are trademarks of MacroMind® Inc. Macintosh, MacPaint and Hypercard are trademarks of Apple Computer Inc. Glue is a trademark of Solutions, Inc. Distributed by Broderbund Software, Inc. ©1987 MacroMind® Inc.



Circle 34 on reader service card



Color images created or edited on a Mac II can now be rendered beautifully as slides.

line resolution from any program that can create a file in PICT format, and reproduces any fonts and graphics other than those stored as PostScript files. It also produces slides with a wide range of color gradations, accepting images from a Mac II with up to 24-bit color graphics.

Users create slides by first taking a screen shot within an application, probably by using a desk accessory, and then quitting the application to generate a film print with utility software. A local color-film processing lab can then produce color prints. The film recorder is set up for Ektachrome 100 film but also provides look-up tables that can be configured for different film types. For more information, call Mirus at 415/949-5544.—Adrian Mello

HYPERCARD

Video Voyages via HyperCard



Using *The National Gallery of Art Laserguide*, HyperCard, and a videodisk player, you can view more than 1500 works of art in the National Gallery of Art's permanent collection. Your ability to take notes in HyperCard and to search for a certain artist or period using a built-in subject index of over 1000 terms enhances your tour.

You can even combine key words, thus narrowing your selection to a category such as French Impressionist landscapes.

Although the information included in Voyager Company's *Laserguide* is valuable, many users will find the guide's forte is customization. As with any HyperCard stack, you can add your own notes—including key words—to any card, making *Laserguide* easily configurable by teachers. This capability extends beyond the videodisk that contains the National Gallery of Art's permanent collection to thousands of videodisks sitting on shelves in schools, homes, and libraries, making HyperCard a potentially powerful publishing medium in the computer world.

Once Voyager developed a way to "tour" its 40 laser



Create your own exciting tours using this HyperCard control panel for a videodisk player.

disks—ranging from movie classics to educational videos to an anthology of computer graphics—it decided to give even more power to the user through "interactive video." At this technology's most basic level, the disks are produced in a way that lets viewers use the freeze-frame and slow-motion options of their videodisk players, allowing close analysis of selected scenes.

But to make the most of interactive video, Voyager developed the Voyager Videostack, a HyperCard "toolkit" that contains ready-made buttons to control videodisk functions such as Play, Stop, Step, Fast Forward, and Frame Search. The

stack's Event Maker lets you combine events (for example, play until frame 300 with audio 1 only) and make them into HyperCard buttons. Scripts for all buttons and commands are available to the user to facilitate programming. A Slide Tray module lets you make a list of frames and their descriptions and then play them back for presentations.

The National Gallery of Art Laserguide sells for \$49.95 (plus \$95 for the videodisk). Voyager will offer additional disks later this year, including a guide to the works of Vincent van Gogh and a complete index to Bio Sci, an educational disk that contains over 6000 images. The Voyager Videostack (software for creating tours with your own videodisks) also sells for \$49.95; a Mac Plus, SE, or II and a videodisk player with an RS-232C interface is required. Voyager even sells cables to connect the Mac to a number of videodisk players. For further information, contact The Voyager Company, 2139 Manning Ave., Los Angeles, CA 90025, 213/475-3524.

The Mac II Mix-and-Match Game



At least 15 mostly multisync color monitors were declared Mac II-compatible last year. They all claimed compatibility with a variety of computers and video cards because they could work with the AppleColor video card. Surprisingly, no third-party developers introduced cards offering access to resolutions higher than the 640 by 480 pixels supported by the AppleColor card.

This year, several vendors

have already come forward to remedy that, so the Mac II community can start looking for the best combination of price and performance between cards. Here's a sampling of what's available.



ROBERT CARDIN

RasterOps's color card drives many monitors—choosing a combination is still complex.

E-Machines has two new color cards and two color monitors for the Mac II. Its Color-Plus II video card is intended as a low-cost alternative to the Apple card. Working in 1-, 4-, or 8-bit modes, at 832 by 624 pixels, it will offer twice the screen information of the Apple card. That's enough to display an 8½-by-11-inch page in landscape mode on a 13-inch monitor.

SuperMac is offering a 24-bit Spectrum color card for \$2995 that will drive SuperMac color monitors at up to 1024-by-768-pixel resolution. At \$745, a SuperMac Color Card is higher in price than Apple's \$499 card. However, both include SuperMac's PixelPaint software, which lists for \$495.

RasterOps, after introducing the first Mac II 24-bit color card last fall, has announced an 8-bit color card. It will require a monitor that has a refresh rate

(continues)

ClickArt®

The No.1 Source for Desktop Publishing Art

NEW

ClickArt

EPS Illustrations



Professional PostScript® Art for Macintosh® or PC

Picture this. Computer art crisp and clear enough for even the most discriminating designers. Introducing ClickArt EPS Illustrations, the new standard for high-quality computer art.

ClickArt EPS Illustrations is a portfolio of *PostScript* art created by professional artists. *PostScript* allows EPS Illustrations to be resized to any dimension *without* loss of detail or sharpness. And, the resolution of the images is limited only to the resolution of your *PostScript* printer. That means that EPS images print at 300 dots per inch on your LaserWriter or Personal PagePrinter, and at 2,540 dpi on your Linotronic™ 300!

EPS Illustrations are ideal for use in publications demanding only the highest quality art. Images include business-oriented art, maps, food & drink, travel & transportation, maps, sports, musical instruments, seasons, states, people & lifestyles, and more.

Macintosh and IBM PC versions: \$129.95. Must be used with applications that read Encapsulated *PostScript* and printers that output *PostScript*.

NEW

ClickArt

Business Images

Serious Business Art

Guaranteed to give your business reports that professionally designed look. Includes presentation art, office equipment, industrial & communication images, people, states, map symbols, flags, food, arrows, logos, and more.

Macintosh \$49.95
PC \$69.95



ClickArt

Personal Graphics

Personable Images

Add that personal touch to your printed materials. Includes cars, famous people, cartoons, animals, sports, statues, billboards, Americana, dingbats, borders, arrows, political figures, skylines, and more.

Macintosh \$49.95
PC \$69.95



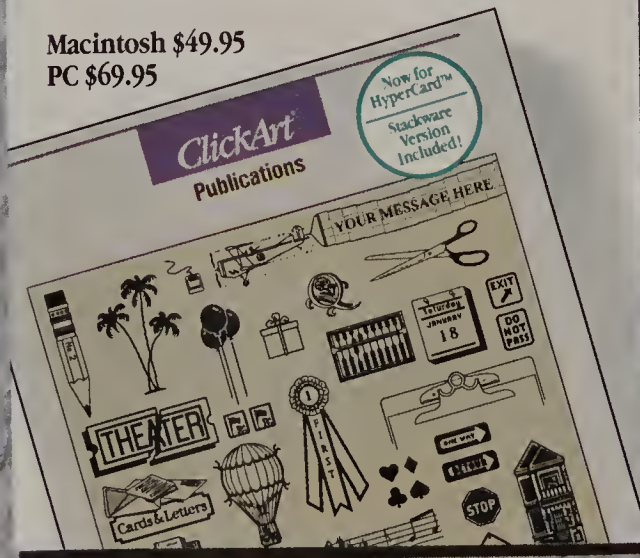
ClickArt

Publications

Published Results

Give your publications a professional flair. Includes borders, cartoons, maps, illustrated headlines, presentation displays, abodes, dingbats, desk items, seasons, marquees, literary figures, street signs, sports, MC and Visa symbols, decorative alphabets, and more.

Macintosh \$49.95
PC \$69.95



NEW

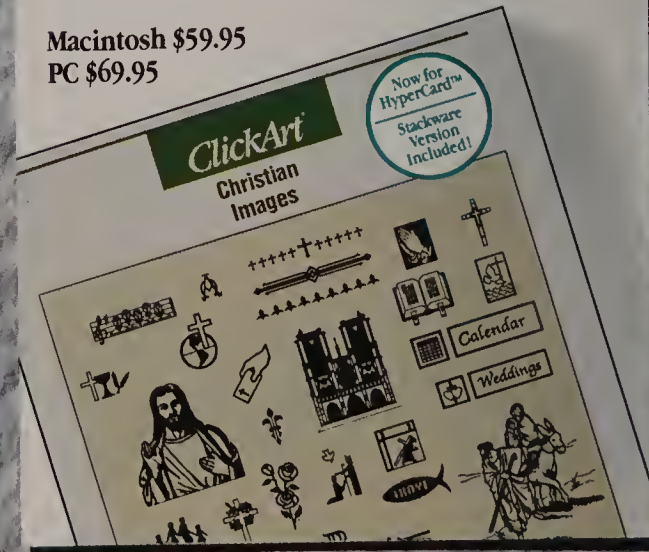
ClickArt

Christian Images

Heavenly Art

Enlighten your Christian-oriented publications. Includes crosses, Christian lifestyles, services & ceremonies, images of Jesus, churches, old testament, stations, religious holidays, and more. For the wide range of Christian denominations.

Macintosh \$59.95
PC \$69.95



And now when you buy ClickArt you get the best of both worlds: ClickArt ships in Stackware and MacPaint files! To receive your Free ClickArt Catalog, filled with image portfolios, font collections, and graphic accessories for your personal computer, contact:

T/Maker Company • 1973 Landings Drive • Mountain View, CA 94043 • 415-962-0195

© 1988 T/Maker Company. All rights reserved. T/Maker and ClickArt are registered trademarks of T/Maker Company. All other products are trademarks of their respective holders.

Circle 83 on reader service card

T/Maker

Send for
FREE Catalog!

of at least 64 Hz. Its resolution will be the same as the 1280-by-1024-pixel, 24-bit video card, providing a 19-inch monitor with over 90 dots per inch (the AppleColor monitor has a resolution of 69 dpi). Few multisync monitors will support such a high resolution.

Megagraphics has an 8-bit video card that, when bundled with a new 1024-by-900 resolution, 19-inch color monitor, is priced around \$5000. The card has an 80-Hz clock rate and 80-kHz refresh rate.

Taxan will be offering a low-end multisync monitor that will work with the AppleColor card. Taxan's 19-inch color monitor works with its own card—the combination will cost about \$4500. The monitor will feature dynamic beam focusing, a technique that will eliminate the fuzziness so often found in the corners of third-party monitors. —*Scott Beamer*

Extending the Long Arm of the Law



Thanks to GW Instruments, the Mac II is providing law enforcement agencies with low-cost,

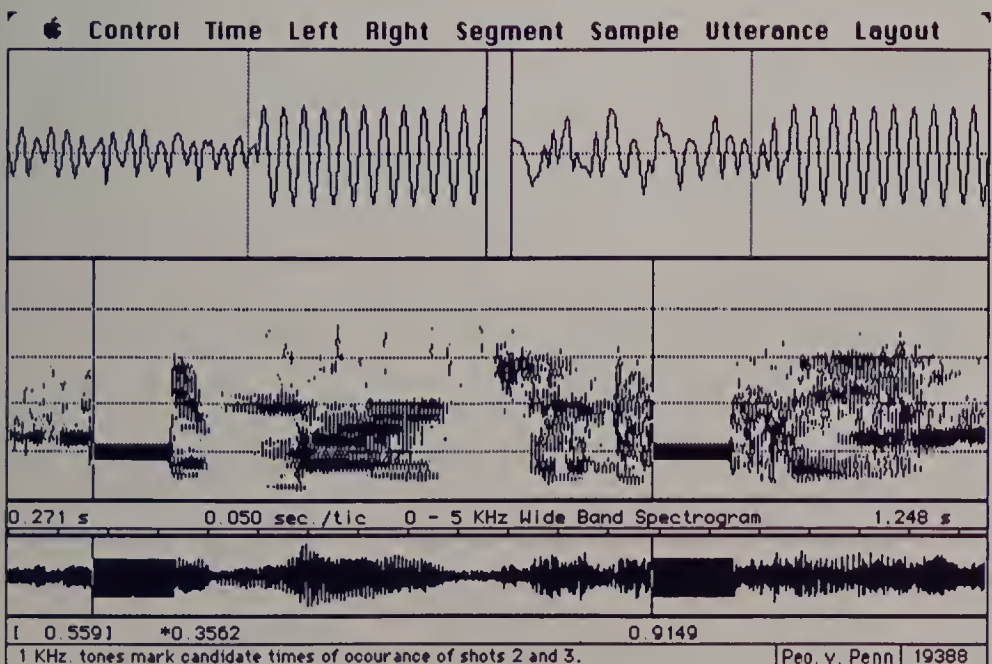
easy-to-use analysis of recorded speech and sounds.

In a recent trial in San Diego, Mac Speech Lab II was used to analyze gunshots recorded over the 911 emergency line so a jury could determine if the shots were fired by the defendant deliberately or haphaz-



ardly. Partly because of the sound analysis, the defendant was found not guilty.

Adding the power of the Mac II to MacSpeech Lab has considerably extended the capabilities of speech analysis on a microcomputer. Finer details of speech can now be recorded for analysis. Using a MacADIOS II data acquisition board connected to the NuBus, Mac Speech Lab II extends the upper end of speech sampling from 20 kHz to 80 kHz. The system also makes it easier to view the analyses, because the sound spectrograms can now be displayed at a higher resolution by using the gray scales of the Mac II monitor—and the screens can be printed on a LaserWriter.



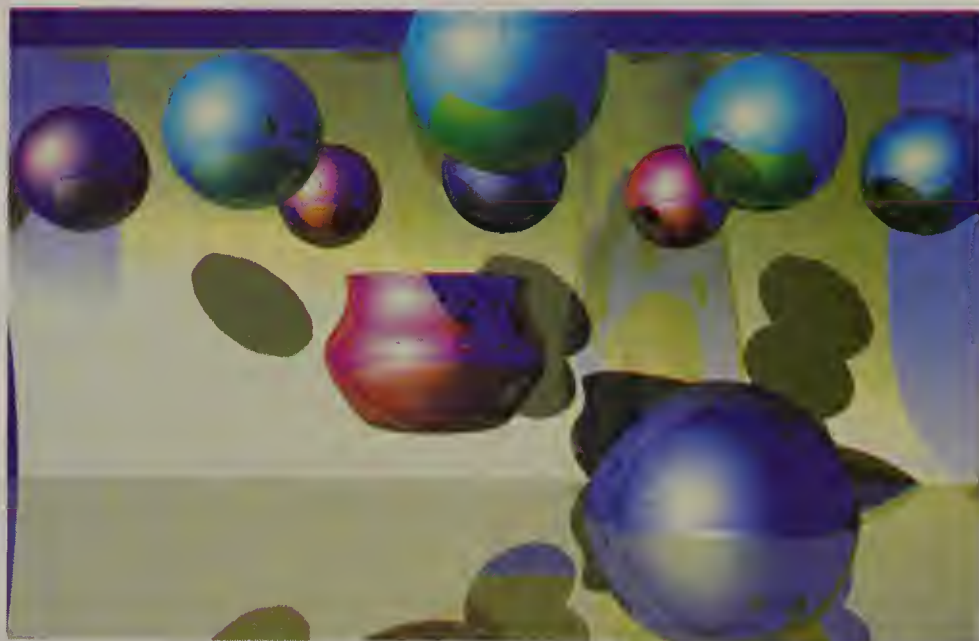
GW Instruments' MacSpeech Lab II digitally records and analyzes complicated sounds using sophisticated tools.

Eventually, the work being done with MacSpeech Lab II on speaker-independent speech analysis (using a technique known as Linear Predictive Coefficients) may provide the Mac with a way to recognize any spoken command. The talking Mac has been here awhile; can the listening Mac be far away?

For further information, contact GW Instruments in Cambridge, Massachusetts, at 617/625-4096. —*David R. Kosiur*

Design Dimensions is a 3-D, wire-frame, free-form drafting program that displays curved surfaces. Its files can be passed on to Solid Dimensions, which smooths the edges of the designs and colors all planes with reference to a particular light source. Screen images can be saved in resolutions from 640 by 480 to over 4000 by 4000 pixels.

Ray Trace Dimensions permits a surface to be broken



These forms aren't real. The image was produced on a Mac II with Visual Information's Ray Trace Dimensions, which uses millions of calculations to show how light would fall on objects.

Animation, CAD, and 24-Bit Color



Visual Information is currently shipping four computer-aided-design software packages—the first commercial software for the Mac II that supports its entire 16.8-million-color palette at one time. These are the only commercially available applications that can take advantage of a 24-bit color video card. (All other Mac II video cards support only 8 bits per pixel of color information, limiting software to a screen display of 256 colors at one time.) Expect to see stunningly realistic color animations with the potential to equal any graphic effects seen on TV.

down into individual pixels, each having its own 24-bit color value. This allows high-quality solid modeling with finely shaded color comparable to anything produced by other modeling packages. Reportedly, this program has already duplicated designs produced by VAX computers, without any degradation of image.

Animation Tool Kit takes frames from Solid Dimensions and runs animation sequences. It can also draw the frames between a beginning and an ending frame, which is called "in betweenning." Using such tools, an architect can produce a 3-D building model and then lead clients on an animated "walk-through."

(continues)

Not just another pretty face.



Sure, you're going to love the new look of Sigma Designs' LaserView Display System.

But the real beauty is in how well it handles your desktop publishing, spreadsheets and word processing.

Quite simply, LaserView offers the sharpest image anywhere: an eye-opening 1664x1200 (115 dpi) resolution for detail work; and our standard 832x600 resolution for normal text-based work. You'll now be able to see detailed line drawings, half-tone images, or even 6-point type.

So what you get is the performance of a workstation in a Macintosh

environment. A full 19" monitor that's easy on the eyes, thanks to its high contrast screen; easy on the body because of its tilt/swivel base; and easy to work with, since you can view anything from a two-page spread to an engineering drawing.

Put it all together and you have a single monitor solution for your Macintosh II or SE. With full software compatibility and a full-function control panel for switching between resolution modes.

LaserView lets you see your work the way it was meant to be seen. No matter what software

you're using — Pagemaker, Excel, Word, Illustrator or whatever.

Want a closer look? Visit your nearest authorized Sigma Designs dealer. Or call Sigma Designs today at 415-770-0100.

Then see why the newest screen star isn't just another pretty face.



Sigma Designs, Inc.
46501 Landing Parkway
Fremont, CA 94538

**Available at all
Businessland Centers.**

LaserView: TM Sigma Designs, Inc. Macintosh: TM Apple Computer, Inc. Illustrator: TM Adobe Systems Inc. Pagemaker: © Aldus Corp. Microsoft Word and Excel: © Microsoft Corp.

Circle 117 on reader service card

S I G M A D E S I G N S

Another use for Design Dimensions would be for passing a Solid Dimensions model to MacNeal-Schwendler's finite-element analysis program, MSC/pal, which can place theoretical stresses and twists on the model. The model surface will show differential coloration to represent stress variables. The design can then be modified and retested for stress, before it's passed it on to machining programs. For more information, call Visual Information in La Puente, California, at 818/918-8834.—*Scott Beamer*

Beyond CAD with Simulation



Simulation is a large part of high-level engineering computation, and now the simulation program Simul 1.3, developed by a team of Abvent engineers working with Apple France, is bringing this capability to the Macintosh. What distinguishes simulation programs from mere animation is the use of real engineering rules to determine how much each element of a picture rotates, twists, or bends.

A typical simulation project might begin as a CAD drawing of a bridge that needs to be tested while a series of heavier and heavier trucks passes over it. Using Simul you define equations of motion for a truck, write the bending and deformation equations for the bridge under various loads, link the equations to the graphic elements of the bridge—and away you go. Simul calculates the physics of the situation at user-selected time intervals and displays a truck driving over a firm or sagging bridge.

Simul is creating great interest—especially at the computer lab in UCLA's chemistry de-



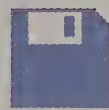
Dr. Sandra Lamb of UCLA's chemistry department computer lab compares laboratory results with those calculated by Simul, a powerful simulation program from France.

partment, where students might be able to run complicated experiments without a laboratory.

For simple moving images Simul can calculate approximately 3000 screens per second on a Mac Plus (it's written in assembly language), and this rate improves by a factor of 50 or so on a Mac II, with its 68881 math coprocessor. There's a wide range of simulation display choices, from slow motion to fast forward. However, some simulations are so complex that even Simul's fast calculations can't present the results in real time. In these cases, Simul can be directed to save the computation files from simulations for later playback.

A good simulation program is the final tool the Mac needs to compete with mainframe-linked workstations in mechanical engineering. Simul looks like it fills this serious computing need, and it's fun, too. List price of Simul is \$1195. For further information, call Abvent in Beverly Hills, California, at 213/659-5157.—*Charles Seiter*

Lotus's Modern Jazz: Something for Everyone



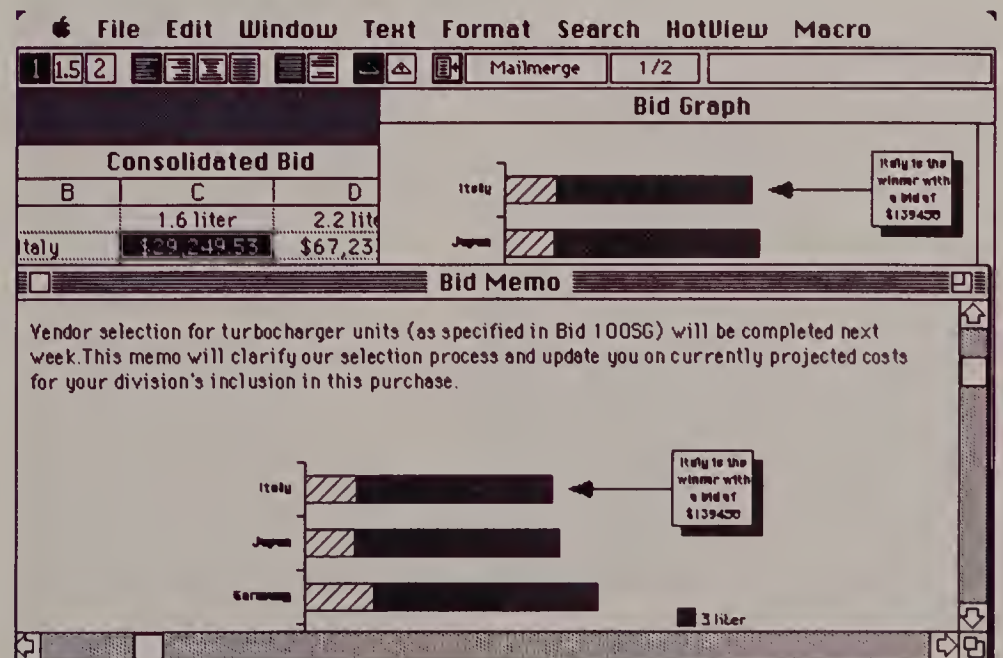
Lotus's Modern Jazz is an integrated business package that includes modules for word processing, databases, worksheets, graphics, communications, and forms. It's intended for casual users looking for an all-in-one

software solution: beginners in a business environment; and those who want maximum file transferability, both between modules of the program and between the principal business software of the Mac and MS-DOS worlds.

Modern Jazz is more a major upgrade of Jazz than a new product. One significant improvement, a function and command macro language, allows you to automate almost all the program's capabilities. For instance, you can program Modern Jazz to call a database, download some figures, insert those figures in a report, and print the resulting document. Complex functions can be started with a few keystrokes. And since this command language is similar to Symphony's, Lotus expects those familiar with Symphony to write many customized applications.

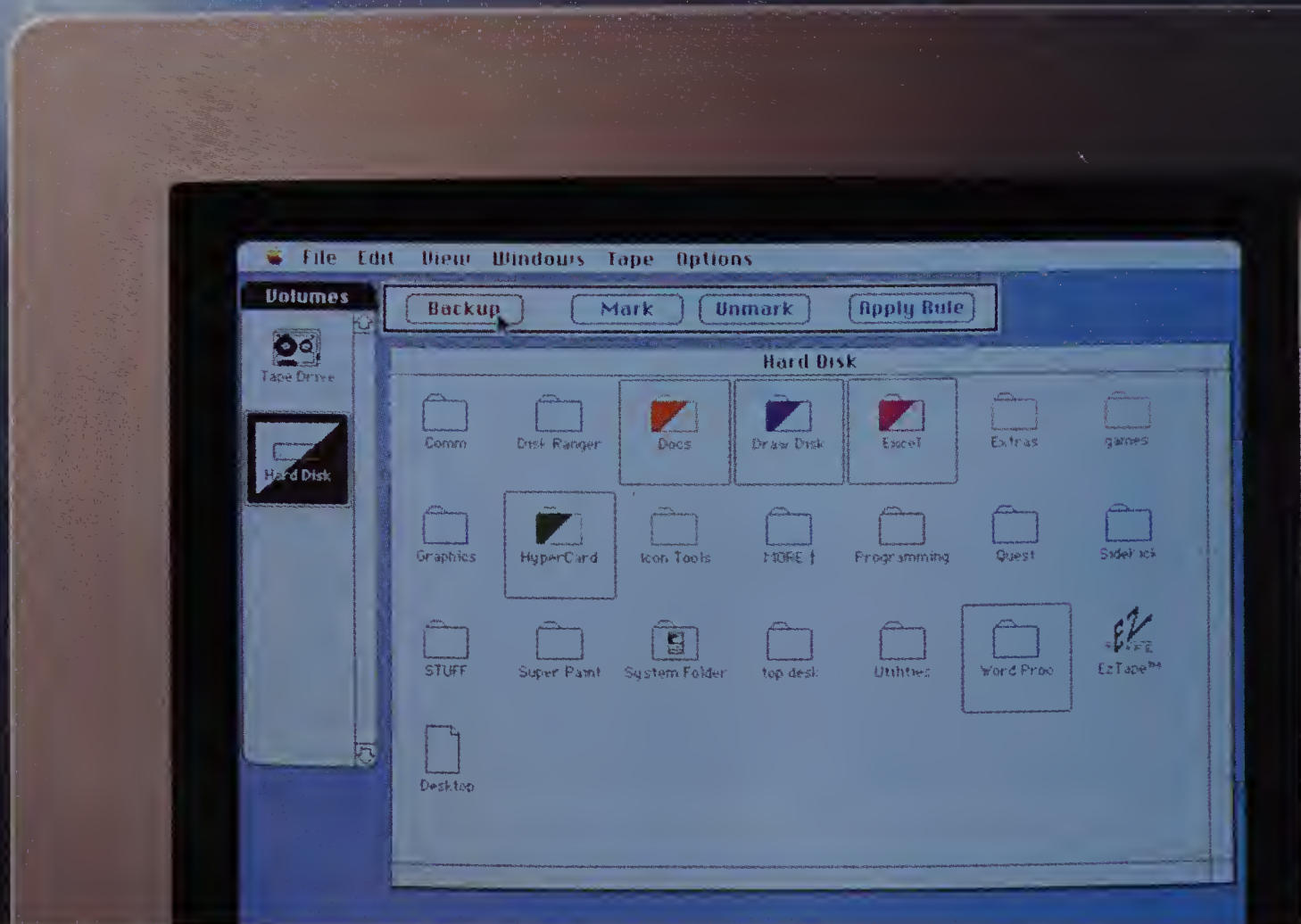
Modern Jazz improves on Jazz in other ways, too. It now includes a forms module and a beefed-up worksheet, and it's integrated with MultiFinder. Large screens, color, and more than one megabyte of RAM are also supported. Modern Jazz retains Jazz's Hotview: an important feature that links information between any of the

(continues)



Modern Jazz includes a scripting language that lets you create automatic functions like dialing a database and patching the resulting information into graphs and text.

Finally, backup that works like a Mac



At last there's a backup system with the power, sophistication and ease of use to equal your Mac: Irwin BACKUP for the Macintosh.

Our new 40 and 64 megabyte tape backup systems are the first with fully iconographic EzTape software which provides maximum control and flexibility in selecting folders and files to backup or restore. They're the only backup systems with the power to support AppleShare, TOPS and Apple's new A/UX. The only backup sophisticated enough to allow data exchange between Macintosh, Unix, MS-DOS and OS/2 computers.

And all this comes with the proven reliability of Irwin's patented AccuTrak data tracking technology. It's just one more reason why Irwin is the world leader in microcomputer tape backup, with more than 500,000 systems already installed.

For data protection on a par with your Macintosh, there's only one choice: Irwin BACKUP.

For more information on the new Irwin BACKUP systems for the Macintosh, see your dealer or call **1-800-BACKUP1**.

Irwin and EzTape are registered trademarks and AccuTrak, iconographic and Irwin BACKUP are trademarks of Irwin Magnetic Systems, Inc. Macintosh is a registered trademark and AppleShare and A/UX are trademarks of Apple Computer, Inc. Unix is a registered trademark of AT&T. TOPS is a registered trademark of Sun Microsystems, Inc. MS-DOS is a registered trademark of Microsoft Corp. OS/2 is a trademark of International Business Machines Corp.

IRWIN
MAGNETICS

2101 Commonwealth Blvd.
Ann Arbor, MI 48105-1531
313/996-3300

Circle 82 on reader service card

modules so that changing information in one module changes the information in other modules as well. And new memory-management techniques are designed to eliminate Jazz's reputation as a memory hog.

List price of Modern Jazz is \$295. For more information, call Lotus in Cambridge, Massachusetts, at 617/577-8500.
—Scott Beamer

Backing Up the Nonprofits



Apple's donations of products to community groups is well known. But where do such groups turn for help once the hardware is installed and Apple's initial training period is completed?

In Chicago, more than 300 community groups—ranging from the Center for Street People to the Chicago City Ballet—turn to the Information Technology Resource Center.

For as little as \$200 per year, members can help themselves to a smorgasbord of computer literacy workshops, needs-analysis seminars, and hands-on training. Members can also sample software and hardware informally in the center's computer laboratory. Boasting 22 Macs, PCs, and UNIX systems, as well as an extensive software library, the lab places a special emphasis on programs geared toward the special accounting and fund-raising needs of nonprofit organizations.

Similar centers operate in a half-dozen other cities, but Chicago's is easily the largest and most extensive. Executive Director Deborah Strauss says that the Macintosh is a favorite among nonprofit groups—in part because of Apple's philanthropy, but also because of the machine's publishing prowess.



MICHAEL L. ABRAMSON

Deborah Strauss helps bring Macintosh capabilities to Chicago nonprofits.

She points out that desktop publishing is incredibly important to groups whose existence depends upon regular communication with their constituents. For further information, call the Information Technology Resource Center at 312/684-1050.—Daniel Brogan

Seeking the Best



Over a year ago, Record Newspapers, a group of community weeklies based in Port Jefferson, New York, networked 37 Macintosh Plus and SE computers, an equal number of hard disks, and four LaserWriter Plus printers.

The result? Instead of straining to put out two publications each week with two conventional phototypesetters, three input terminals, and lots of cutting and pasting, Record Newspapers has rapidly grown to five weekly papers and there's still no end in sight.

Record's archipelago of Macintoshes is networked with TOPS software and AppleTalk hardware. Each workstation

runs its own Microsoft Word 3.01; editors and production managers also use Quark XPress and Aldus's PageMaker 2.0a.

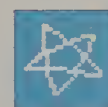
The big advantage of this setup is speed. At each workstation writers, editors, proofreaders, and production managers have everything they need for word processing, graphics, and page layout right on the hard disk. The network is used only for copying files, sending messages, and outputting.

Finished pages are printed in sections called tiles, using LaserWriter Plus printers that produce a resolution of 300 dots per inch (dpi), as opposed to a phototypesetter's 1200 to 2400 dpi. While the difference in resolution would be easily seen on glossy paper, it's more difficult to see on newsprint, especially when master pages are printed on Hammermill Laser Plus paper.

It's not all smooth sailing, however. Most of the time, TOPS can handle a user modifying a file on a hard disk at the

same time someone is sending another file to the disk. But once or twice a day the network crashes—a limitation more than a bug. The long-term solution will be to dedicate one Mac as an editorial drop-off point. In the interim, despite these crashes, the Mac system has proven an enormous success.—Kathy Esseks

Star Trek's Macs



With a million-dollar budget for each episode, "Star Trek: The Next Generation" is the highest-priced episodic television show in history. Also unusual is the degree to which Macintoshes are used in nearly every stage of producing "Star Trek."

A prime example of the Mac's involvement is the 15 to 20 minutes of specially composed music that accompanies every

(continues)



KEN COLLINS

Tom Baade networked 37 Macs to bring desktop publishing to a group of increasingly successful New York newspapers.

Tired of Waiting for MAC II Memory?

Call 1-800-CLEARPT



The MC2RAM Memory
for the Mac II

We Deliver Today!

MC2RAM Macintosh-Compatible Memory

From the largest manufacturer of workstation memory comes the best package of megabyte memory for the Macintosh II – Clearpoint brings you the MC2RAM.

Backed by a corporate commitment for innovative design, competitive pricing and unparalleled support, the MC2RAM is available priced to meet your needs:

- ◆ **Innovative Technology –**
Using advanced surface-mount technology, Clearpoint packs a full megabyte of memory onto the MC2RAM SIMMs with state-of-the-art one megabit DRAMs.
- ◆ **Pricing Economy –**
With a cost-effective one-megabit design, the MC2RAM offers the best pricing for the best package.

Clearpoint is a registered trademark of Clearpoint Research Corporation. Apple, Macintosh and Mac are trademarks of Apple Computer, Inc. DEC, MicroVAX 2000, MicroVAX II are trademarks of Digital Equipment Corporation. Sun is a trademark of Sun Microsystems Inc. DN 3000, DN 4000 and Apollo are trademarks of Apollo Computer. IBM and RT PC are trademarks of International Business Machine Corporation.

The Clearpoint Difference

◆ Superior Memory Design

Across the board, Clearpoint brings the workstation marketplace better memory design. Whether it's higher density, state-of-the-art DRAM technology or our proprietary EDC (error detection and correction) chip set – Clearpoint designs it better.

◆ Guaranteed Buyer Satisfaction

Need the best memory solution for all your in-house systems? Clearpoint provides consultation – working for long-term satisfied customers, not just short-term sales. With comprehensive, user-friendly documentation, trade-up credits and competitive pricing, Clearpoint guarantees buyer satisfaction.

◆ Unconditional Lifetime Warranty

Clearpoint delivers reliability. With the strictest dynamic testing and thermal burn-in in the industry, Clearpoint confidently offers a lifetime warranty. Then backs it up with a 24-hour Repair/Replacement policy, 24-hour-a-day product support and an 800 service number that gives you a warranty with teeth.



CLEARPOINT

Other Workstation Memory

SUN FAMILY

SNXRAM (compatible with Sun 3/1XX): Fits up to 28 MB in one slot.

SNX2RAM (compatible with Sun 4/2XX and 3/2XX): Packs up to 32 MB on 1 board, plus a microprocessor-managed "diagnostic hotline" for local or remote diagnostics.

SNX60 (compatible with Sun 3/60): Available in 1 MB SIMMs, four in a set.

DEC FAMILY

MV2RAM (compatible with the MicroVAX II): Up to 16 MB on a board, the MV2RAM runs cooler and more reliably.

MV2000 (compatible with the MicroVAX 2000): At 16 MB/board, you get MicroVAX II performance – at half the cost!

APOLLO FAMILY

DNXRAM (compatible with the DN 3000): Available in 1 and 2 MB boards.

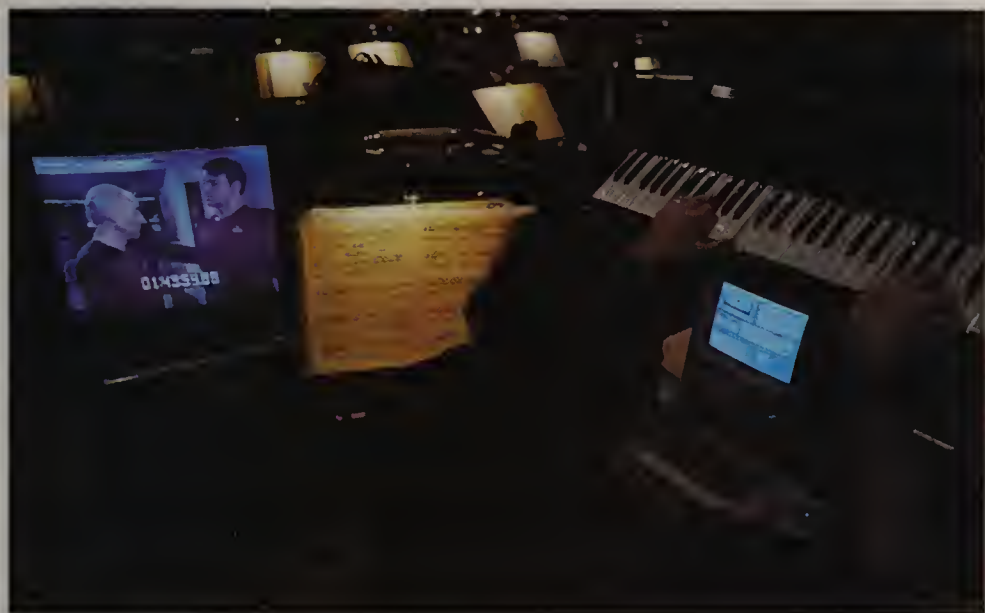
DNX4RAM (compatible with the DN 4000): Up to 8 MB on one board!

IBM RT PC FAMILY

RTRAM (compatible with the RT Models 6150 and 6151) Available in 4 and 8 MB boards.

Call or write for our catalog, Designer's Guide to Add-in Memory, or Clearpoint's regular memory monographs, POINTERS.





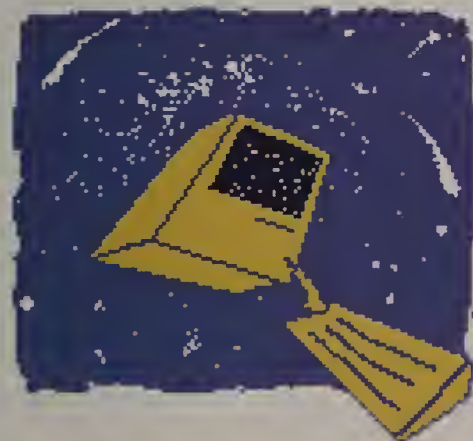
"Star Trek: The Next Generation" uses plenty of Macs and synthesizers to create and produce its background music.

episode. Ron Jones, one of the series' composers, begins writing the music on his Macintosh II about ten days before going into the recording studio. Jones designs many custom sounds using Opcode Systems' patch editor/librarian for his Yamaha and Roland synthesizers.

During this process, Jones will save much of his work as MIDI sequences using Mark of

session is sort of an electronic band—just the three keyboard synth stations, three percussionists, and an Akai Electronic Wind Instrument.

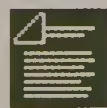
During the recording sessions all musicians hear a click track in their headphones; the track is converted into timing codes that drive the Macintosh sequencers and ensure that the computer-produced music and the orchestra musicians will be in sync. This permits Jones to record in one pass music that would traditionally have required overdubbing; it also gives him the freedom to experiment with new scoring methods involving multiple tempi. —*Christopher Yavelow*



the Unicorn's Performer software. With Performer, he can make a rough tape of the various themes as a "temp track" to play against the picture while he works.

Usually, three synth players, each with a Macintosh and 9 to 15 synthesizers, are required to record the music. To get the 15 to 20 minutes of music on tape, there are two scoring sessions, each lasting between three and four hours. The first session includes an orchestra of 36 to 40 musicians in addition to the synth players, and the second

Stretch That Form



Have you ever used a drawing program to forge lots of lines and text into a form and then found something had to be changed? Sometimes it means drawing the whole form over again. Help is on the way with SoftView's FormSystem, due to be shipped in the third quarter of this year, which contains a set of "graphically intelligent" tools.

Here's how FormSystem works. You set the size of the form and then begin drawing vertical and horizontal lines. Inside the resulting boxes you place the desired text. At any time you can enter the graphic edit mode, which turns the cursor into a handle when it passes over a line. Push down on the mouse when the handle appears, and you can move any line to your heart's content. But notice, if you move a vertical line so there's not enough room for the text, the words automatically rewrap to fit the new area. Even multiple periods—those dot, dot, dots—

increase or decrease in number to fill out a line. In a very real sense, your form becomes rubbery, able to stretch or contract vertically as well as horizontally while keeping text in proper proportion.

Once you've created a basic form, you'll be able to add spreadsheetlike calculations; draw or paste in graphics; out-

put and input information to several database formats, such as dBase; and produce independent screen and printed versions, for ease of reading on screen. By year's end, SoftView plans to release a networking version of FormSystem that will exchange data with common spreadsheet programs such as Excel and 1-2-3. For further information, call SoftView in Camarillo, California, at 805/388-2626.

New High in Color Graphics



Truevision plans to capture the high-end Macintosh video-card market—a position it already holds in the MS-DOS world with its Targa and Vista boards

(continues)

File Edit Options Forms

SoftView / Form 3800

Form 3800 General Business Credit DMB No. 1545-0895

Department of the Treasury Internal Revenue Service Attach to your tax return 1986 Attachment Sequence No. 25

Name(s) as shown on return Michael W. & Susan A. Moore Identifying number 123 45 6789

Part I Tentative Credit

1	Investment credit (Form 3468, line 8)	1	1,111.11
2	Jobs credit (Form 5884, line 7)	2	2,222.22
3	Credit for alcohol used as fuel (Form 6478, line 11)	3	3,333.33
4	Credit for increasing research activities (Form 6765, line 20)	4	4,444.44
5	Low-income housing credit (Form 8586)	5	5,555.55
6	Employee stock ownership plan (ESOP) credit (Form 8007, line 3)	6	6,666.66

File Edit Options Forms

SoftView / Form 3800

Form 3800 General Business Credit DMB No. 1545-0895

Department of the Treasury Internal Revenue Service Attach to your tax return 1986 Attachment Sequence No. 25

Name(s) as shown on return Michael W. & Susan A. Moore Identifying number 123 45 6789

Part I Tentative Credit

1	Investment credit (Form 3468, line 8)	1	1,111.11
2	Jobs credit (Form 5884, line 7)	2	2,222.22
3	Credit for alcohol used as fuel (Form 6478, line 11)	3	3,333.33
4	Credit for increasing research activities (Form 6765, line 20)	4	4,444.44
5	Low-income housing credit (Form 8586)	5	5,555.55
6	Employee stock ownership plan (ESOP) credit (Form 8007, line 3)	6	6,666.66

SoftView's FormSystem lets you increase the font size of the top form to automatically create the new form on the bottom.

120 MINUTES OF SPAGHETTI WESTERNS. OR 80 MEGABYTES OF BACKED-UP DATA.



testing, self-monitoring, and the long-term experience of tens of thousands of microcomputer users—is more reliable than any other backup option. Not to mention easier.

Because a VCR, you already understand. And our pull-down menus tell you everything else you need to know. How to copy or restore an entire hard disk, specific files, or just the files that have been

added or changed since the last backup. Could anything be simpler?

As a matter of fact, yes. With our “smart” Videotrax VCR, everything happens automatically. You can see it for yourself by visiting your nearest Videotrax dealer. And you can get the name of your nearest dealer by calling 800-992-9779 (in California, 800-821-0612).

We strongly suggest you do that. Because if your data means anything to you, acquiring Videotrax protection is a thought you should definitely entertain.

Did you ever dream that you could record data as well as movies on an ordinary, inexpensive videocassette? That, after the shoot-em-ups leave you laughing, a head crash doesn't have to leave you crying?

Pinch yourself. And start keeping those precious megabytes safe and sound with the newest version of our ingenious Videotrax® system. Now featuring a controller and software for the Macintosh™ Plus, Macintosh SE, or Macintosh II computer.

The system utilizes our enhanced Videotrax VCR—or any old VCR for that matter—to back up data on standard VHS or Beta cassettes. Hooks up to your Mac's SCSI port with standard cables. And—by reason of exhaustive

testing, self-monitoring, and the long-term experience of tens of thousands of microcomputer users—is more reliable than any other backup option. Not to mention easier.

Because a VCR, you already understand. And our pull-down menus tell you everything else you need to know. How to copy or restore an entire hard disk, specific files, or just the files that have been

added or changed since the last backup. Could anything be simpler?

As a matter of fact, yes. With our “smart” Videotrax VCR, everything happens automatically. You can see it for yourself by visiting your nearest Videotrax dealer. And you can get the name of your nearest dealer by calling 800-992-9779 (in California, 800-821-0612).

We strongly suggest you do that. Because if your data means anything to you, acquiring Videotrax protection is a thought you should definitely entertain.





Macs can now produce four-color output that's suitable for high-quality commercial printing, using a color board from Truevision that renders the three primary colors plus black.

—with a 32-bit-per-pixel color video board designed for the Mac II.

The additional 8 bits per pixel—more than are available on the 24-bit cards built by RasterOps and SuperMac—can be used for four-color processing output (the other cards can handle only three colors) as well as for specialized video effects. Other potential applications include video and presentation slide production, digital pre-press and desktop production, computer-aided design, computer-aided engineering, and image processing.

The NuVista board offers two basic functions: recording and storing up to 32 screens of color or video, and processing these and other graphic images.

Once an image is edited, NuVista can send its color output to a videotape recorder, video monitor, or color printer.

NuVista is built around the Texas Instruments 34010, a 32-bit programmable graphics processing chip. Although other video boards use this chip as well, none of them fully implements its graphic capabilities due to unresolved technical problems. NuVista output is

fully compatible with NTSC (standard American television), PAL (European television), and a wide variety of Macintosh monitors.

The NuVista board is scheduled to ship by June. The suggested retail price is \$5995 for the 4-megabyte version and \$4250 for the 2MB version. For further information, call Truevision in Indianapolis, Indiana, at 317/841-0332.—*Scott Beamer*

Jungle Mac



Piranhas, screaming pihas, toucans, and giant morpho butterflies are just a few of the thousands of unique creatures that make the Amazon jungle one of the most exciting places on earth. But some 26,000 square kilometers of rain forest are felled each year—and conservationists are scrambling to save what's left. Helping in that task, busily generating reports and cataloging scientific readings, is a lone Macintosh computer.

It rests in a cherished, air-

conditioned enclave in the Amazonian capital of Manaus, Brazil, at the headquarters for the eight-year-old Minimum Critical Size of Ecosystems Project, operated jointly by the World Wildlife Fund and Brazil's Instituto Nacional de Pesquisas da Amazonia. The project's aim is



to track the changes that take place when part of the jungle is cut off from the rest by development—in the hope that patterns of extinction can be detected and then avoided.

As of last summer, scientists had identified 351 bird species, 42 types of frogs, 25 lizard species, 52 species of mammals, and hundreds of species of trees. Much of the data resulting from these identifications is fed into computers, including the Mac 512KE brought to Manaus two years ago.

Brazilian office staff uses a Portuguese version of MacWrite 4.5 to churn out critical documents with the help of a recently added 800K external disk drive, and graduate students employ graphics software to enhance reports.

Bird-watcher Randy Downer brought in a 20-megabyte hard disk and logged in 32,676 bird captures before it broke down. But perhaps the most ambitious user is Wilson Roberto Spironelo, a graduate student who spent 16 months tracking brown capuchin monkeys around the jungle, then logged his data into charts and reports on the Mac.—*Bob Buderi*

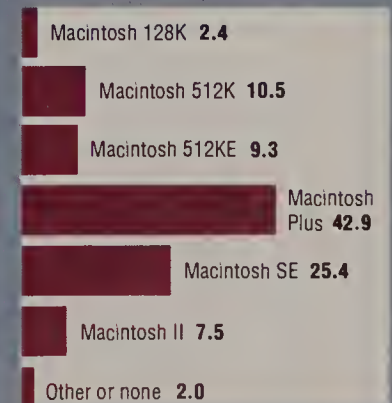
Macworld News: Readers' Views



This month's *Macworld News: Readers' Views* charts are based on questionnaires sent to 1000 randomly selected *Macworld* subscribers. We asked about the number of repairs required for various Macintosh computers and peripherals. Approximately 500 subscribers responded to this questionnaire, giving these results an accuracy of plus or minus 4 percentage points.

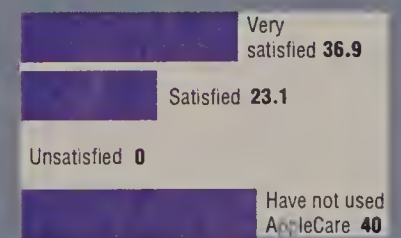
We welcome your ideas for future *Macworld News: Readers' Views* surveys. Please send your suggestions to: News Editor, *Macworld*, 501 Second St., San Francisco, CA 94107. Your ideas are important to us. □

What type of Macintosh do you use most often?



Percentage of 504 respondents

If your Mac is registered for AppleCare, how satisfied are you with AppleCare service?



Percentage of 65 respondents

Readers say the Plus is still very popular. AppleCare users seem quite satisfied.

We deliver

SOFTWARE

NCP denotes not copy-protected.
CP denotes copy-protected.

Aba Software ... NCP

"Draw it again, Sam" (paint program) ... \$94.

Access Technologies ... NCP

Trapeze 2.0 (spreadsheet & graphics) ... 205.

Activision ... NCP

Postcards (clip-art, card stock) ... 20.

Business Class (atlas, req. Hypercard) ... 30.

Focal Point (organizer, req. Hypercard) ... 59.

Aegis Development ... NCP

Doug Clapp's Word Tools ... 42.

Affinity Microsystems ... NCP

Affinifile (DA filer) ... 49.

Tempo 1.2 (power user's macro utility) ... 52.

Tempo II (updated, auto installation) ... 89.

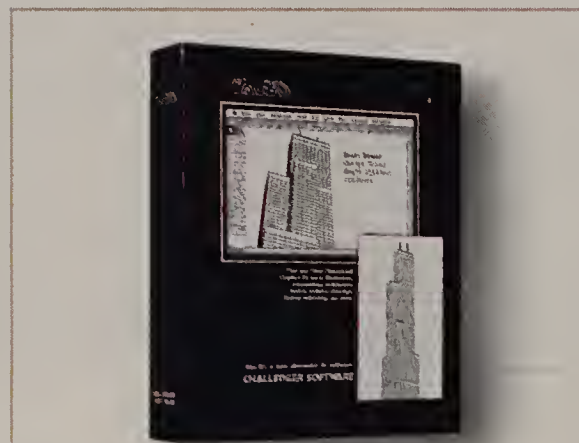
Allan Bonadio Associates ... NCP

Expressionist 1.1 (equation processor) ... 46.

ALSoft ... NCP

DiskExpress (maximize disk performance) ... 26.

Font/DA Juggler Plus (w/sound utility) ... 32.



Challenger Software ... NCP

Mac3D—A veritable powerhouse of features. PostScript® resolution, six variable light sources, user definable tools and more, all contained in a Draw-like program. ... \$126.

Altsys ... NCP

FONtastic Plus (advanced font editor) ... 47.

Fontographer (LaserWriter font editor) ... 239.

Ann Arbor ... NCP

FullPaint (advanced Paint program) ... 49.

Ashton-Tate ... NCP

dBASE Mac 1.0 (relational, req. MacPlus) ... 295.

Batteries Included ... NCP

Thunder! 1.1 (spelling checker) ... 30.

Berkeley System Design ... NCP

Stepping Out (screen extender) ... 54.

Blyth ... NCP

Omnis 3 Plus/Express (database) ... 275.

Omnis 3 Plus/Express (2-5 users) ... 489.

Omnis 3 Plus/Express (6-10 users) ... 1249.

Bogas Productions ... NCP

Studio Session (music creation) ... 49.

Country or Heavy Metal Rock Disk ... 15.

Borland International ... NCP

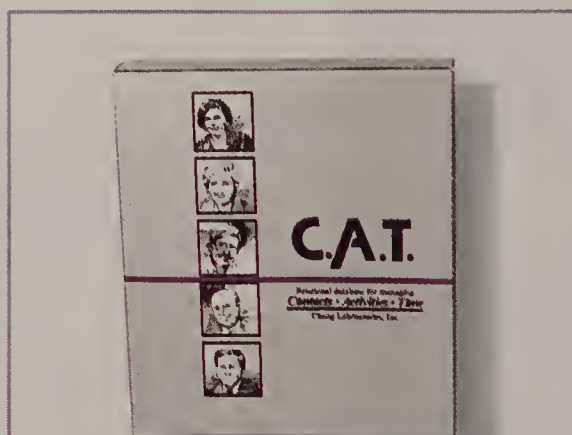
Turbo Pascal Tutor ... 49.

Numerical Methods Toolbox ... 65.

Sidekick 2.0 (includes MacPlan) ... 65.

Turbo Pascal (HFS compatible) ... 65.

Eureka: The Solver ... 129.



Chang Labs ... 5 years

C.A.T.—Powerful relational database for managing Contacts, Activities, and Time. Use to organize events, meetings, day-to-day projects, expense reports, personnel records, etc. . \$239.

Reflex Plus (info management tool) ... 165.

BrainPower ... NCP

StatView (statistics package) ... 32.

Graphidex (DA graphics organizer) ... 65.

DesignScope (electronic circuit design) ... 128.

MathView Professional (num. analysis) ... 145.

StatView 512+ (full-featured) ... 175.

Bravo Technologies ... NCP

MacCalc (easy to use spreadsheet) ... 79.

Broderbund ... CP

Jam Session (create your own tunes) ... 30.

Print Shop (create cards and memos) ... 36.

Geometry (over 350 problems!) ... 60.

Physics (over 300 problems!) ... 60.

CAMDE ... NCP

Nutricalc Plus (full-featured program) ... 175.

CasadyWare ... NCP

Fluent Fonts (two-disk set) ... 27.

Fluent Laser Fonts (Vols. 1-18) ... each 46.

CE Software ... NCP

Calendar Maker (create custom calendars) ... 32.

Disktop 3.0 (powerful DA Finder) ... 32.

QuickKeys (reduce mouse movements) ... 64.

Challenger Software ... NCP

Mac3D (3D graphics, CAD features) ... 126.

Chang Labs ... NCP

Rags to Riches Ledger ... 120.

Rags to Riches Payables ... 120.

Rags to Riches Receivables ... 120.

Rags to Riches Three Pak ... 289.

C.A.T. (contacts, activities, time) ... 239.

Inventory Control or Professional Billing ... 239.

Professional Three-Pak ... 359.

Retail Business 3 Pak ... 359.

Cortland ... CP

TopDesk 2.3 (7 new desk accessories) ... 32.

Cricket Software ... NCP

Pict-O-Graph (color on the Mac II) ... 105.

Cricket Graph (multiple windows) ... 119.

Cricket Draw (advanced draw capabilities) ... 169.

DataViz ... NCP

MacLink Plus (transfer Mac/IBM data) ... 145.

Davidson ... CP

Math Blaster! (grades 1-6) ... 27.

Deneba Software ... NCP

Merriam-Webster's Thesaurus ... 36.

Comment (electronic Post-It notes) ... 56.

Canvas 1.0 (includes desk accessory) ... 109.

Coach (interactive spell checker) ... \$59.

Coach Professional ... 109.

Dove Computer ... NCP

RAMSnap (RAM Disk/Disk Cache) ... 21.

Dow Jones ... CP

Desktop Express (documents via MCI mail) ... 95.

Market Manager Plus (portfolio mgmt.) ... 159.

Dubl-Click Software ... NCP

Calculator Construction Set ... 36.

World-Class Fonts! (both volumes) ... 36.

WetPaint Clip Art (both volumes) ... 36.

Electronic Arts ... CP

Disk Tools Plus (8 DAs plus tools) ... 32.

Deluxe Music Construction Set 2.0 ... 61.

Enabling Technologies ... NCP

Easy3D (create solid 3D objects) ... 79.

Pro 3D (3D shaded modeling) ... 199.

Enzan-Hoshigumi USA ... NCP

Japanese Clip Art Scroll 1 "Heaven" ... 59.

Japanese Clip Art Scroll 2 "Earth" ... 59.

Japanese Clip Art "Borders" Scroll ... 69.

MacCalligraphy (create unique designs) ... 115.

Fifth Generation Systems ... NCP

FastBack Mac (powerful backup utility) ... 59.

1st Byte ... CP

Mad Libs (w/synthesized speech) ... 14.

First Shapes (all about sizes & shapes) ... 32.

Kid Talk ("talking notebook") ... 32.

Math Talk (math learning tool) ... 32.

Math Talk Fractions (great homework helper) ... 32.

Smooth Talker (speech synthesis) ... 32.

Speller Bee (spelling learning tool) ... 32.

Forethought ... NCP

Factfinder 1.1 (information organizer) ... 35.

FileMaker 1.0 (custom design reports) ... 39.

Foundation Publishing ... NCP

Comic People (create your own characters) ... 25.

Comic Strip Factory (create cartoons) ... 45.

FWB Software ... NCP

Hard Disk Partition ... 45.

Hard Disk Util (program backup) ... 54.

Great Wave Software ... NCP

TimeMasters (learn about time, ages 4+) ... 22.

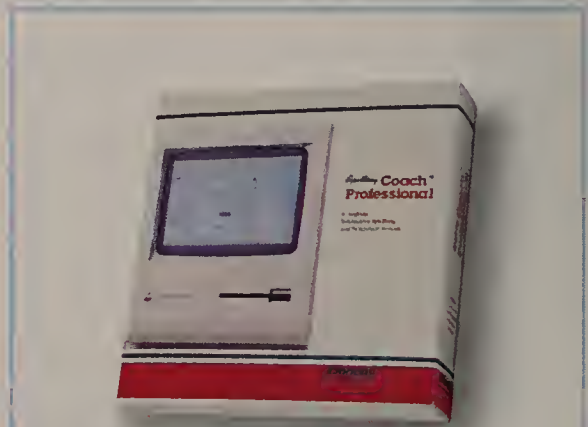
KidsTime (educational, ages 3-8) ... 26.

American Discovery (U.S. facts & fun) ... 39.

Crystal Paint (graphic symmetries) ... 42.

ConcertWare+ (music composition) ... 39.

ConcertWare+ MIDI ... 79.



Deneba Software ... NCP

Coach Professional—Edit big-league documents with a whole team of features: Hyphenation, 95,000 word spelling dictionary, synonym thesaurus, legal & medical dictionaries . . \$109.



“I’m becoming a little paranoid.”

“Dear MacConnection,

“I have been prompted to write this letter due to your inability to ship products as promised. I ordered software on a Wednesday, and you told me you couldn’t ship until the next day. So I figured I wouldn’t have it till the following week. *It arrived two days later.*

“I placed another order a week later. You told me it was out of stock, and might not arrive for 10 days. *It arrived here the next morning!* This kind of service is ridiculous. I’m becoming a little paranoid about thinking of the items I need. Now that you are promising overnight delivery, things may start arriving *before* I order them.”

Lee Erisman
Lincoln, Nebraska

MacConnectionTM

14 MILL STREET, MARLOW, NH 03456 1-800/622-5472 or 603/446-7711

©Copyright 1988 PC Connection, Inc. MacConnection is a division and trademark of PC Connection, Inc., Marlow, NH.

door to door...



OWL International ... NCP

Guide 2.0—Flow through your information naturally using intuitive links rather than rigid program formats. Your information becomes an interactive tool \$119.

Greene, Inc. ... NCP

QuickDEX (address book) 32.

Hayden Software ... CP

Score Improvement for the SAT 58.

Hayes ... NCP

Smartcom II (communications) 88.

Ideaform ... NCP

MacLabeler or DiskQuick 27.

201 Quicklabels 18.

HyperBook Maker (print stacks into book) .. 42.

Imagine ... NCP

Smart Alarms (DA reminder system) 35.

Multi-user Appointment Diary 89.

Infosphere ... CP

LaserServe (network software) 62.

ComServe (NCP, modem sharer) 124.

MacServe (network software) 159.

Innovative Data Design ... NCP

MacDraft 1.2A (requires 512k) 149.

Kent Marsh Ltd.

The NightWatch (hard disk security) call

MacSafe (advanced security program) call

LaserWare ... CP

LaserWorks (requires 512k, LaserWriter) .. 189.

LaserPaint (requires Mac Plus) 314.

LaserPaint Color II (256 gray scales, supports

256 Pantone & 8 Bit color; NCP) 379.

Layered ... CP

Notes for...Excel or Microsoft Works 40.

Notes for...PageMaker or Ready,Set,Go!3 .. 40.

Notes for...Microsoft Word 40.

Learning Company ... CP

Reader Rabbit (ages 7-12) 39.

Legisoft/Nolo Press ... NCP

WillMaker 2.0 (prepare your own will) 29.

Letraset ... NCP

Image Studio (image processing software) 279.

Ready,Set,Go! 4.0 (page layout) 279.

Linguist's Software ... NCP

Tech (1000 different symbols) 59.

LaserTech 79.

FOREIGN LANGUAGE FONTS

SuperFrench/German/Spanish 39.

MacKana/Basic Kanji 39.

MacHebrew or MacKanji 59.

MacHindi Sanskrit (Amjer) 59.

MacSemitic/Coptic/Devanagari, MacKorean,

MacThai, MacGreek, MacHieroglyphics ... 59.

MacArmenian, MacGeorgian, MacCyrillic,
MacArabic/Farsi, MacAkkadian each \$59.

MacHebrew Scriptures 79.

MacGreek New or Old Testament 79.

MacChinese (supplements available) 79.

MacGreek/Hebrew/Phonetics 89.

FOREIGN LANGUAGE LASER FONTS

LaserFrench/German/Spanish 79.

LaserGreek or LaserHebrew 79.

LaserTransliterator 79.

LaserKorean 89.

LaserCyrillic 115.

Living Videotext ... NCP

More 1.1C (outlines, windows, & tree charts) 175.

Lundeen & Associates ... NCP

WorksPlus Spell (spell checker for Works) .. 46.

WorksPlus Command (macros for Works) .. 61.

MacroMind ... NCP

VideoWorks II (animation tool) 118.

MacroPac International ... NCP

101 Macros for Excel 44.

Micro Analyst ... NCP

Mac Zap (recover crashed hard disks) 39.

MECA ... NCP

Managing Your Money (finance) 129.

Microlytics ... NCP

Word Finder (synonym finder) 37.

Microsoft ... NCP

Basic Interpreter 3.0 61.

Chart 1.02 (42 chart styles, CP) 72.

Microsoft Write 1.0 (w/spell checker) 109.

Multiplan 1.1 110.

File 1.05 110.

Basic Compiler 1.0 119.

Fortran 2.2 (compiler) 169.

Works 1.1 (integrated tool) 185.

Microsoft Mail (up to four users) 195.

Microsoft Mail (up to 10 users) 339.

Microsoft Mail (up to 20 users) 525.

Excel 1.06 (power spreadsheet) 239.

Word 3.01 (powerful word processor) 239.

PowerPoint (presentations) 239.

Migent ... NCP

In House Accountant (small business) 119.

Miles Computing ... NCP

Mac the Ripper Vol. 3 (req. Paint program) .. 27.

Orchestra of Fonts Vol. 4 (30 different fonts) 27.

Peoples, Places & Things Vol. 5. 27.

Mindscape ... NCP

The Perfect Score: SAT (CP) 46.

ComicWorks (create your own comics) 47.

GraphicWorks 1.1 (newsletters & posters) .. 85.

Monogram ... NCP

Forecast (tax planning) 40.

Dollars & Sense (home, small business) 81.

Business Sense (full-featured) 282.

Nantucket ... NCP

McMax (dBASE III compatible) 179.

Nashoba Systems ... NCP

FileMaker Plus (feature-packed database) 149.

North Edge Software ... NCP

Timeslips III (time & expense tracking) 119.

Odesta ... NCP

Double Helix II (relational, custom menus) 339.

Olduvai Software ... NCP

DA-Switcher (unlimited desk accessories) .. 25.

Post ART (clip art, 3 disk set) 35.

Icon-It! (create custom icon bars) 39.

FontShare (share PostScript® fonts) 159.

Read-It!TS (OCR software for Thunderscan) 79.

Read-It! (300 dpi OCR software) 199.

OWL International ... NCP

Guide 2.0 (hypertext, free-form info) \$119.

Guide Envelope System 99.

Palantir ... NCP

MathFlash (flash card drills) 26.

WordPlay (crossword puzzles) 26.

MacType (typing instruction, NCP) 31.

inTalk (communication to emulation, NCP) 119.

Passport Designs ... CP

Mastertracks Pro (music editor) 259.

PBI Software ... NCP

HFS Locator Plus (DA organizer for HFS) ... 26.

Personal Computer Peripherals ... NCP

HFS Backup 28.

ProVUE Development ... NCP

OverVUE 2.1 (power-packed database) ... 149.



Satori ... NCP

BulkMailer—Tame that mass-mailing list into a single easily managed file! Search and sort alphabetically or by zip code \$79.
BulkMailer Plus—up to 90,000 names. 195.

Rubicon Publishing ... CP

Dinner At Eight-Encore Edition Bundle 51.

Satori ... NCP

BulkMailer 3.0 (mailing lists) 79.

BulkMailer Plus (up to 90,000 names) 195.

Legal Billing (attorneys to accountants) ... 369.

Legal Billing II (full trust accounting) 549.

Project Billing (architects to engineers) ... 439.

Silicon Beach Software ... NCP

Silicon Press (printer utility, 512k) 41.

World Builder (program creator) 41.

SuperPaint (advanced graphics program) .. 79.

Simon & Schuster ... NCP

Typing Tutor IV (typing instruction) 35.

SoftStyle ... NCP

Epstart (Epson printer driver) 27.

Laserstart (Hewlett-Packard Laserjet) 58.

Printworks for the Mac (Dot Matrix) 43.

Printworks for the Mac (Laser printers) 85.

SoftView ... NCP

MacInUse (time-use manager) 42.

TaxView Planner 1987-1991 49.

MacInTax (the complete tax program!). 65.

Software Discoveries ... NCP

Merge Write (MacWrite mail merge) 35.

Record Holder Plus (data manager) 45.

Software Supply ... NCP

Suitcase (font and DA utility) 37.

PowerStation (alternative to Finder) 37.

Software Ventures ... NCP

Microphone 1.1 (includes Glue™) 119.

Microphone II (MultiFinder compatible) ... 229.

One day does it!



Software Ventures ... NCP

Microphone II—Powerful scripting & background features makes connecting to your information service a snap. MultiFinder compatible. Includes Glue™ \$229.

Solutions, Inc. ... NCP

SmartScrap & The Clipper 35.
SuperGlue (total graphic integration) 52.
The Curator (access your artwork) 79.

Springboard ... CP

Art a la Mac Volume 1 or 2 (NCP) 23.
Early Games (counting, shapes, ages 2-6) . . 28.
Easy as ABC (alphabet, ages 3-6) 28.
Certificate Maker (over 200 certificates!) . . . 34.
Certificate Library Vol. 1 18.

SuperMac Software ... NCP

SuperSpool 3.4 (very fast, top-rated) 42.
SuperLaserSpool 82.
Multi-User SuperLaserSpool 199.
Diskfit (backup & restore utility) 54.
Network Diskfit (automatic back up) 205.
Sentinel (encryption) 155.
Pixel Paint (color Paint program) 259.

Survivor Software ... NCP

MacMoney (personal finance) 69.

Symmetry ... NCP

Acta 2.0 (outline/writing desk accessory) . . . 36.
HyperDA (access Hypercard stacks) 42.
PictureBase 1.2 (clip art manager, 512k) . . . 58.

Target ... NCP

Scoop (composition & page layout) 295.

Think Educational ... CP

MacEdge II (math & reading) 28.
Mind Over Mac (memory & strategy games) 28.

THINK Technologies ... NCP

HFS Navigator (search for buried files) . . . 34.
Laserspeed (LaserWriter utility) 55.
Lightspeed Pascal 65.
Lightspeed C (top-rated C Compiler) 95.
CAPP's for Lightspeed C 49.
CAPP's for Lightspeed Pascal 49.
InBox Starter Kit (CP) 199.
InBox Personal Connection (Mac or PC) . . call

T/Maker ... NCP

ClickArt Personal Graphics, Effects, Publications, Letters Vol. 1 or 2, Holidays, Business Images each 28.
Christian Images 35.
Bombay, Plymouth, or Seville Laser font . . . 45.
ClickArt EPS Illustrations (over 3 Meg's worth) 79.
Write Now (word processor) 98.

TML Systems ... NCP

TML Source Code Library 55.

TML Pascal (compiler, req. 512k) \$59.

TOPS ... CP

TOPS Teleconnector (DIN8 or DB9) 45.
TOPS (file-server/LAN software) 119.
NET PRINT (formerly TOPS PRINT) 119.
TOPS for the PC 119.
TOPS Flashcard (network add-in card) . . . 169.

True BASIC ... NCP

LANGUAGE & TOOLKIT

True BASIC (interpreter & compiler) 119.
3D Graphics Toolkit 49.
Other Toolkits (Sorting & Searching or Advanced String) 49.

EDUCATIONAL SOFTWARE

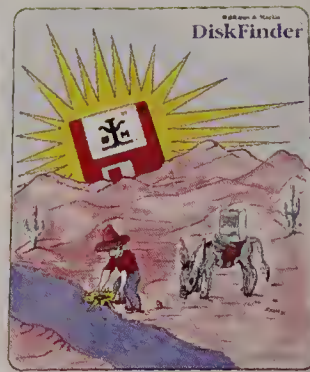
Algebra I or II, Pre-Calculus, Trigonometry, Discrete Math, Probability, Calculus, Arithmetic & MacFunction each 35.
TrueSTAT (statistics) 58.

Turner Hall ... NCP

MacSQZ (use w/Microsoft Excel) 49.

Unicorn ... CP

Animal Kingdom (ages 6-12) 27.
Decimal Dungeon (math, ages 9 and up) . . 27.
Fraction Action (arcade style math game) . . 27.
Mac Robots (pre-school program) 27.



William & Macias ... NCP

DiskFinder—Not just another disk cataloger, but a powerful file librarian. Operates as a desk accessory, provides instant access to all your disks and files. \$29.

Math Wizard (math games, ages 5-10) . . . 27.

Read-A-Rama (reading, ages 5-8) 32.

William & Macias ... NCP

Disk Finder (DA disk catalog) 29.
myDiskLabeler w/Color (req. ImageWriter II) 31.
myDiskLabeler w/LaserWriter option 34.
216 Smart Labels (for ImageWriter) 15.

Working Software ... NCP

Lookup (90,000 word dictionary) 29.
Findswell (locate documents fast) 29.
Spellswell (spelling checker) 42.
Spellswell Legal or Medical Dictionary . . . 56.

GAMES

Accolade ... CP

Hardball (baseball simulation) 23.

Activision ... CP

Tass Times in Tonetown 21.
Shanghai (Mah Jongg strategy) 24.
Portal (sci-fi novel) 30.

Addison-Wesley ... CP

Puppy Love (you and your dog will love it!) 19.

Ann Arbor ... CP

Grid Wars (3D arcade) special
Normally \$22. Free w/purchase of FullPaint.

Avalon Hill ... CP

MacPro Football (req. 1 Meg) 28.
MacPro Football 85 Team or Season 16.

Baudville ... CP

Guitar Wizard (learning tool for guitar) . . . 22.
Ted Bear's Rainy Day Games 22.

Blue Chip ... CP

Millionaire (stock market) 35.

Broderbund Software ... CP

Lode Runner (over 150 levels) 24.
Ultima III (fantasy adventure) 24.
Ancient Art of War (military strategy) . . . 27.
Toy Shop (create working models) 30.

Bullseye ... CP

Ferrari Grand Prix (Formula One racing) . . 32.
Fokker TriPlane Flight Simulator 32.

Electronic Arts ... CP

Skyfox, Pinball Construction Set, Dr J vs Larry Bird, Archon each 15.
Ogre (tank simulation) 20.
Patton vs Rommel or Scrabble 27.
Chessmaster 2000 28.

Epyx ... CP

Sub Battle Simulator (NCP) 24.
Winter Games (Olympic events) 24.

Greene, Inc. ... NCP

Crystal Quest (color arcade on Mac II) . . . 24.

Hayden Software ... CP

Perplexx (scrabble-type game) 24.
Sargon III (9 levels of chess) 29.

Infinity Software ... CP

Go (4000-year-old strategy game) 27.
Grand Slam (tennis, req. 512k) 27.

Infocom ... CP

Leather Goddesses, Nord & Bert, Bureaucracy, Hollywood Hyjinx, Lurking Horror, Plundered Hearts, Borderzone, Stationfall each 24.
Beyond Zork 30.
Classic Mystery Library: Moonmist, Suspect, & Witness 36.
Science Fiction Classics: Hitchhiker's, Planetfall, & A Mind Forever Voyaging . . . 36.
Zork Trilogy 42.
Invisicues Hint Booklets (please specify) . . . 6.



T/Maker ... NCP

ClickArt EPS Illustrations—Accent your work with 180 high-quality PostScript® images. Artwork can be resized without losing detail or sharpness; resolution limited only by printer .. \$79.

Disks to Drives.

MacroMind ... NCP

Mazewars+ (play via modem or network) \$31.

Microsoft ... CP

Flight Simulator (the Mac takes flight) 32.

Micro Sports ... CP

MSFL Pro League Football 32.

Miles Computing ... CP

Down Hill Racer (3D ski simulation) 24.

Harrier Strike Mission II 27.

Fool's Errand (optional hint booklet avail.) 27.

Mindscape ... CP

Crossword Magic 30.

Balance of Power (world politics) 30.

King of Chicago (req. minimum 512E) 30.

Shadowgate (castle adventure) 30.

Uninvited (mystery adventure) 30.

Deja Vu: A Nightmare Comes True. 30.

Enchanted Scepters (CP, over 200 scenes) \$21.

Dark Castle (top-rated arcade action). 27.

Beyond Dark Castle (the wait is over!) 27.

Apache Strike (3D helicopter action) 27.

Simon & Schuster ... CP

Star Trek—The Kobayashi Adventure 24.

Sir-Tech ... CP

Mac Wizardry (high-rated fantasy) 35.

SPHERE, Inc. ... NCP

Tellstar II (No. & So. hemispheres) 15.

GATO (submarine simulator) 26.

Orbiter (space shuttle simulation) 26.

Falcon (F-16 flight simulation) 26.

XOR ... NCP

NFL Challenge (w/illustrated handbook) . . . 64.

HARDWARE

Manufacturer's minimum limited warranty period is listed after each company name. Some products in their line may have longer warranty periods.

Apricorn ... 1 year

ApriCord Mac (parallel converter) 75.

AST Research ... 6 months

Mac 286 (MS-DOS on your Mac II) 1079.

AST TurboScan (300 dpi scanner) 1369.

AST TurboScan Flatbed 1369.

AST TurboLaser P/S. 3395.

Curtis Manufacturing ... lifetime

SURGE SUPPRESSORS

Safestrip (6 outlets) 21.

Diamond (6 outlets) 32.

Emerald (6 outlets; 6 ft cord) 36.

Sapphire (3 outlets; EMI/RFI filtered) 47.

Ruby (6 outlets; EMI/RFI filtered; 6 ft cord) . 59.

DataDesk ... 2 years

MAC-101 (high-performance keyboard) . . 139.

Dove Computer ... 90 days

Toolkit (clamp, torx driver & wrist strap). . . 15.

SCSI Interface/Port 85.

MacSnap 524E (512E to 1 Meg). 156.

MacSnap 524 (512k to 1 Meg) 175.

MacSnap 524S (512E to 1 Meg w/SCSI). . . 219.

MacSnap 548E (512E to 2 Meg) 389.

MacSnap 548 (512k to 2 Meg) 399.

MacSnap 548S (512E to 2 Meg w/SCSI) . . 449.

MacSnap 2S (1 Meg to 2.5 Meg). 489.

MacSnap 4S (1 Meg to 4 Meg) 969.

MacSnap 8S (for Mac II, to 8 Meg). 1939.

MacSnap Plus 2 (MacPlus to 2 Meg) 289.

MacSnap Plus 2H (MacPlus/SE to 2.5 Meg) 489.

MacSnap Plus 4H (Plus/SE/II to 4 Meg) . . 969.

68020 ACCELERATOR BOARDS FOR MAC SE

Model MSE 1 (basic 16 MHz, 0 Meg of memory) 585.

Model MSE 2 (MSE 1 with 1 Meg) \$779.

Model MSE 3 (MSE 1 with math

co-processor). 779.

Model MSE 4 (MSE 1 with 1 Meg & math

co-processor). 975.

1024 Option (1 Meg accelerator or Mac II

memory expansion) 195.

Math Kit (math co-processor chip set) 225.

Ergotron ... 1 year

Mouse Cleaner 360° 15.

MacTilt or MacTilt SE. 68.

MacTilt (for large monitor) 85.

Farallon Computing ... 1 year

PhoneNET-AppleTalk 120 9.

PhoneNET PLUS (DB-9 or DIN-8) 44.

PhoneNET StarController™ w/StarCommand™

software. 1395.

PhoneNET StarController™ Wiring Kit: Punch

Down Block. 69.

PhoneNET CheckNET™ (multi-user) 69.

MacRecorder™ Sound System. 149.

TrafficWatch (monitor network) 159.

Hayes ... 2 years

Smartmodem 1200 299.

Smartmodem 2400 449.

MacPlus 1200 or 2400 Package call

Kensington ... 1 year

Appletalk Cable Clips or Connectors. . each 1.

Mouseway (mouse pad) 8.

Mouse Pocket (for your idle mouse) 8.

Mouse Pocket (ADB) 8.

Mac Plus/Mac SE Cover 9.

ImageWriter II Dust Cover 9.

Printer Stand 16.

FontShare

Olduvai Software ... NCP

FontShare—Share and share alike—and that means your PostScript® downloadable fonts, too! Allows all Macs on a network to share fonts residing on a server \$159.

Trust & Betrayal: The Legacy of Siboot 30.

Defender of the Crown (req. 800k drive). . . 30.

Olduvai Software ... NCP

Maze Survival (action game) 21.

PBI Software ... CP

Strategic Conquest (multi-user) 35.

Primera Software ... CP

Smash Hit Racquetball (top-rated!). 15.

Smash Hit Racquetball II 22.

Psion ... CP

Psion Chess (3D and multi-lingual). 31.

Sierra On-Line ... CP

Leisure Suit Larry (swinging single life). . . 23.

King's Quest I, II or III. 30.

Space Quest (save the universe!) 30.

Silicon Beach Software ... NCP

Airborne! (CP, digitized sounds). 20.



Microsoft ... NCP

PowerPoint—Compose complete boardroom-quality presentations. Design and arrange 35mm slides, flipcharts, overhead transparencies, etc, all within one program. \$239.

1-800/Mac&Lisa 820C

MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/622-5472 or 603/446-7711

©Copyright 1988 PC Connection, Inc. MacConnection is a division and trademark of PC Connection, Inc.

All items subject to availability. Prices subject to change without notice.

*Defective software replaced immediately. Defective hardware replaced or repaired at our discretion.



DA's to Databases.

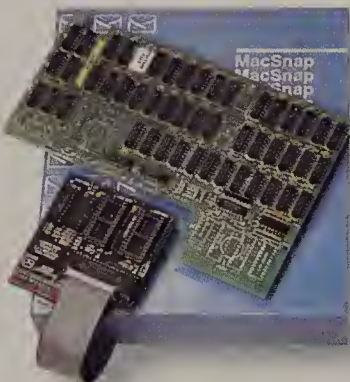
Mouse Cleaning Kit w/Mouse Pocket . . .	\$17.
Disk Drive Cleaning Kit	20.
Macintosh II Stand	21.
Tilt/Swivel	22.
Universal Copy Stand	22.
Extra Long ADB Keyboard Cable	28.
Anti-glare Filter (for MacPlus or SE)	33.
Surge Suppressor	34.
Apple Security Kit	34.
Macintosh II Monitor Cable	37.
Printer Muffler (80 column).	37.
Printer Muffler (132 column).	50.
Printer Muffler Stand (80 column).	25.
Control Center.	62.
A-B Box (for the Mac Plus)	64.
System Saver Mac.	64.
Turbo Mouse (for the MacPlus & SE)	82.
Koala Technologies ... 90 days	
MacVision 2.0 (digitizer).	225.
Kraft Systems ... 1 year	
3-Button QuickStick.	39.
Migent ... 1 year	
Pocket Modem (ext. 300/1200 baud)	168.
Mirror Technologies ... 1 year	
Magnum 800 External Drive (platinum)	199.
MagNet 30x (w/cable & print spoolers)	699.
MagNet 40x (w/cable & print spoolers)	859.
Magnet 40/40 (40 Meg/40 Meg tape).	1769.
Magnum Tape 40 Backup.	call
MSC Technologies ... lifetime	
A+ Mouse (optical mouse)	69.
A+ Mouse ADB (for Mac SE & II)	87.
Nutmeg Systems ... 90 days	
Nutmeg 15" Monitor (for MacPlus or SE)	1295.
Nutmeg 15" Monitor (for Mac II).	1395.
Nutmeg 19" Monitor (for MacPlus or SE)	1495.
Nutmeg 19" Monitor (for Mac II).	1595.
Nuvotech	
EasyNet/AppleTalk cable.	6.
TurboNet (DIN8 or DB9 connector)	28.
Orange Micro ... 1 year	
Grappler (universal parallel interface).	64.
Passport Designs ... 90 days	
Passport MIDI Interface.	95.
Personal Computer Peripherals ... 2 years	
WSI (connects Apple HD 20 to SCSI)	295.
MacBottom HD 21 Meg SCSI.	749.
MacBottom HD 21 Meg SCSI w/Modem	915.

MacBottom HD 32 Meg SCSI	\$899.
MacBottom HD 32 Meg SCSI w/Modem	1045.
MacBottom HD 45 Meg SCSI.	1159.
MacBottom HD 45 Meg SCSI w/Modem	1295.
MacBottom IHD-144 Meg (for Mac II; 1 yr.)	2195.
Practical Peripherals ... 5 years	
1200 Baud External Modem	109.
2400 Baud External Modem	189.
SoftStyle ... 90 days	
MacEnhancer (for plotters to printers).	159.
Summagraphics ... 90 days	
MacTablet 12" x 12"	379.
Systems Control ... 2 years	
MacGard (surge protection).	55.
Thunderware ... 90 days	
ThunderScan 4.0 with PowerPort.	199.
Mac II Power Accessory.	42.
Western Automation	
DASCH RAMdisk 2000K.	399.

DISKS

Double-sided diskettes.

Sony 3 1/2" DS/DD Disks (box of 10)	18.
--	-----



Dove Computer ... 90 days
MacSnap 548S—Take 2 giant steps forward: increase your memory to 2 Meg, and add a SCSI port. User installable. Requires 512E (tools sold separately) **\$449.**

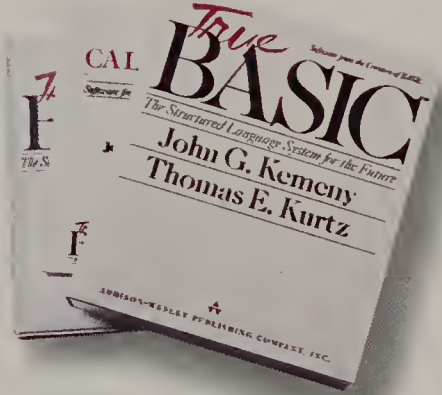
Fuji 3 1/2" DS/DD Disks (box of 10)	19.
Verbatim 3 1/2" DS/DD Disks (box of 10)	19.
MAXELL 3 1/2" DS/DD Disks (box of 10)	20.

INFORMATION SERVICES

CompuServe	
CompuServe Information Service	24.
Grolier's Online Encyclopedia	32.
Dow Jones	
Dow Jones News/Retrieval Membership Kit	24.

ACCESSORIES

Clean Image Ribbon Co.	
Clean Image Ribbon Kit.	12.
Computer Coverup	
External 800k Drive Cover	4.
ImageWriter II Cover	8.
Mac Plus or Mac SE Cover Set.	10.
I/O Design	
Available in navy blue.	
Imageware II (ImageWriter II carry case).	49.



True BASIC ... NCP
True BASIC 2.0—By the people who know what BASIC should be! Kemeny & Kurtz—original authors of the BASIC language. New version includes interpreter and compiler **\$119.**

Macinware SE (Mac SE carry case)	76.
Kalmar Designs	
Teakwood Roll-top Case (holds 45 disks)	14.
Teakwood Roll-top Case (holds 90 disks)	20.
Teakwood Roll-top Case (holds 135 disks)	27.
Moustrak	
Moustrak Pad (standard 7" x 9")	8.
Moustrak Pad (large 9" x 11")	9.
Ribbons	
ImageWriter Ribbons.	4.
Available colors: black, blue, brown, green, orange, purple, red, yellow and silver.	
Rainbow Pack (6 single color ribbons)	20.
Multi 4-Color Ribbon (req. ImageWriter II).	9.
Sensible Softworks	
Quality "MacAttire" nylon dust covers.	7-17.
High Trek ImageWriter II carry case	49.
High Trek Mac SE & ext. kybd. carry case	69.

OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail, charged by weight.
- Allow 1 week for personal and company checks to clear.
- COD max. \$1000. Cash or certified check.
- 120 day limited warranty on all products. *
- To order, call us anytime Monday thru Friday 9:00 to 9:00 EST, or Saturday 9:00 to 5:30 EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30 EST.

SHIPPING

Continental US: Barring massive computer failures and other natural or unnatural catastrophes, all non-C.O.D. orders phoned into MacConnection by 8 PM EST will ship Airborne the same night for next day delivery, except for those within UPS Ground Zone 1 (which is also an overnight service). The total freight charge on any order placed with MacConnection is now \$3. Backorders will also ship Airborne overnight at no additional charge. Some areas require an additional day delivery. **Hawaii, Alaska and Outside Continental US:** Call 603/446-7711 for information.



MSC Technologies ... Lifetime
A+ Mouse—An all optical mouse with no moving parts. Lightning fast, exceptionally accurate cursor control. Includes mouse pad.
A+ Mouse \$69.
A+ Mouse ADB \$87.

The Mac II in Black

by Bruce F. Webster

*Seven monochrome
and gray-scale
monitors for the
Mac II compared*

Well, pilgrims, I tried. I really did. I mean, ever since the Macintosh II was announced with its six slots, each capable of driving a video display, I've wanted to set up a Mac II with six monitors going simultaneously. Heck, it might even be possible. All I know is that several hours of swapping and rearranging cards has led me to conclude that five is the maximum number of video cards you can get running with a Mac II. I've gotten several different combinations of five going simultaneously—in fact, I've got five running as I write this—but adding the sixth card always causes the Mac II to hang during start-up.

But that's not what you came here for, right? You want to know all about gray-scale and monochrome monitors for the Mac.

and White





Viking

Monitorm's 19-inch gray-scale monitor has a glare-free, easy-to-read display. Its 72-dpi resolution means you won't have to squint to read the fine print.

You've come to the right place. However, the usual warnings are in order: any Mac II market is a rapidly moving target, and new products will be out there by the time you read this.

Terms of Discernment

Three basic types of video displays are available for the Macintosh II: monochrome, gray-scale, and color. A monochrome display shows everything—just in black and white. For example, the Apple icon in the upper-left corner of the menu bar is solid black. This type of display tends to be the cheapest, since it requires the least amount of memory (1 bit per pixel) on the video card and because good, high-resolution monochrome monitors are much cheaper than color monitors.

Gray-scale displays work sort of like your color TV with the tint turned all the way down. You get shading—for instance, you can see the separate color bands on the Apple icon—but there is no actual color. Everything goes from white to black, with shades of gray in between. The number of shades available depends upon the number of bits allocated for each pixel. For example, a display with eight bits per pixel gives you 28 or 256 shades of gray (including black and white).

Color displays show everything in colors—including, if you wish, black, white, and shades of gray. The Mac II supports a palette of 16 million colors; the

Bruce F. Webster is a computer mercenary who recently relocated to the West Coast "to be where the action is," whatever that means. He can be reached c/o Macworld.



The Big Picture IQ

The gray-scale brother of E-Machines' Big Picture lets you display images in 256 shades of gray as well as in black-and-white.



LaserView

Sigma Designs allows you to switch between two resolutions, but it only displays up to four gray shades. The new case has front-mounted contrast and brightness controls.



Apple High-Resolution Monochrome

Apple's original gray-scale offering is too small for full-page work but offers the highest-quality picture and the greatest flexibility (2, 4, 16, or 256 shades).



Full Page Display

The monochrome monitor with the smallest footprint of the monitors we tested comes with valuable software and even supports a virtual display mode.



The Big Picture

E-Machines' monochrome model offers a small footprint but plenty of dots. The trade-off is that characters appear slightly smaller than on a Mac SE.



MegaScreen 2001

MegaGraphics' monochrome monitor displays more pixels than most, yet retains a resolution (75 dpi) that won't result in tiny characters.

actual number of colors available on screen at any moment depends, again, upon the number of bits per pixel. A color display requires an RGB (red-green-blue) monitor; these tend to be expensive and bulky, at least compared to monochrome monitors.

Why Choose Mono?

Because it's cheaper. Face it, after you read the December 1987 article on color monitors ("Looking Through the Mac II Kaleidoscope"), you were both excited and depressed. Excited at the thought of having a 1024-by-768 display that supports 256 colors simultaneously. Depressed at the realization that you could buy a new car for the same amount of cash. (True, it

would be a low-end foreign import, probably from Korea or Eastern Europe, but we're still talking about a real, live, turn-the-key-and-drive-off-into-the-sunset car.) A 1024-by-768 monochrome display is a whole lot cheaper and gives you the same working area that a color monitor does.

Another reason for choosing mono is that some of the software currently running on the Mac works best with a monochrome (1-bit-per-pixel) display. Most of that software is changing to accommodate multiple bits per pixel, but programs written originally for the smaller Macs often work better on monochrome displays.

Besides, you can comfort yourself with the fact that monochrome displays update far faster than do gray-scale or color displays. Text scrolls faster, screens redraw faster, and games respond faster.

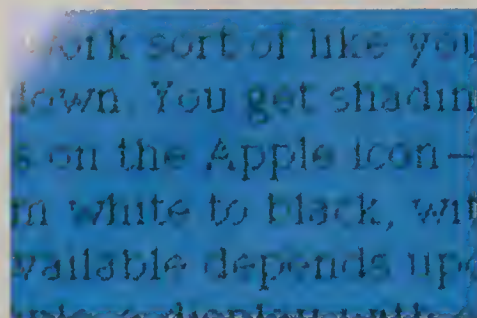
Why Choose Gray-Scale?

Because it's cheaper than color, but gives you the shading that monochrome doesn't. This can be critical in such application areas as desktop publishing, engineering (CAD/CAM), drafting, and image processing. After all, since your laser printer (probably) doesn't produce color output, why do you need a color display, anyway?

Why Choose Color?

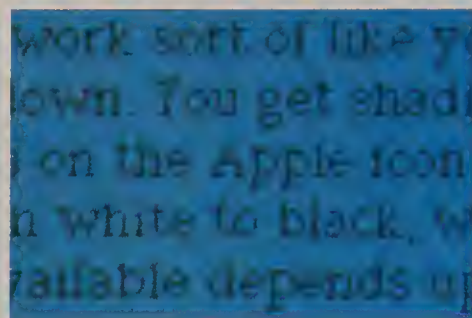
One of three reasons: you have money to burn; you can talk someone else into paying for it; or your application really, really must have color and can't get by with just a gray-scale display. A fourth reason: so you

Monochrome

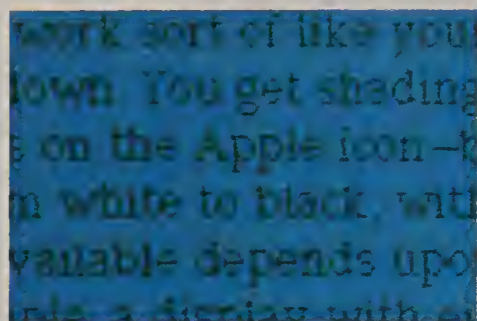


Radius Full Page Display

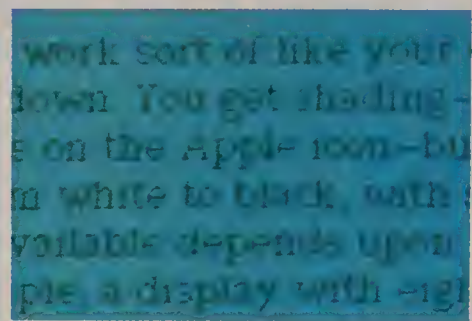
Gray-Scale



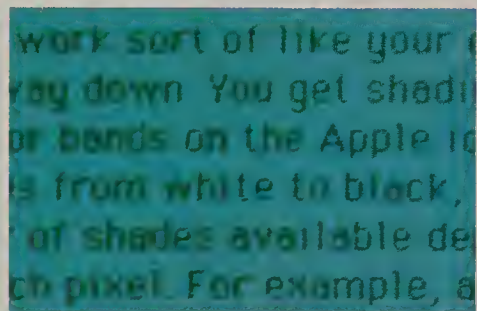
Moniterm Viking



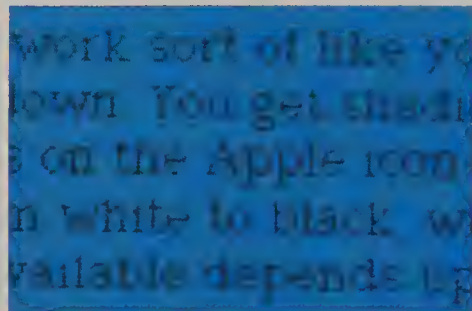
MegaScreen 2001



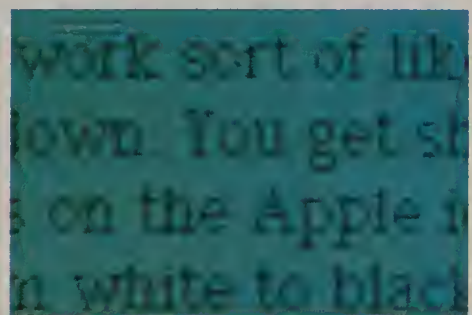
The Big Picture IQ



The Big Picture



Sigma Designs LaserView
(standard)



Sigma Designs LaserView
(high resolution)



Apple High-Resolution Monochrome

can gloat over it. But this article isn't about color displays, so we won't explore these reasons in detail.

Now, let's look at the different monochrome and gray-scale monitors.

Viking

Okay, I've switched to the Moniterm Viking gray-scale display to write this portion of the article. The Viking is, frankly, the nicest of the displays I've looked at. It offers a full set of 256 shades of gray, has lots of space, and is easy on the eyes. The dot pitch (number of pixels per inch) is the same as on the Apple monitors, so there's no sense of shrinking images.

There are a couple of reasons why the Viking is so nice to work on. First, the screen has a built-in filter that virtually eliminates glare. On most of the other screens I can catch some faint (or not so faint) ghost of myself and my surroundings reflecting off the monitor. On this one I don't see a thing, at least not in my normal working position. If I bend forward and lean to one side, I can see a reflection of the sky coming through the window to my left, but since I usually don't work with my face resting on the table, it's not a problem.

The other reason is the phosphor used, which produces a pleasant shade of gray, darker than some of the other displays. That, combined with the filter, makes the display seem almost too dark—but I suspect that's because I'm used to a brighter, more glaring screen.

The only video defect I found in the display was a slight bowing inward along the middle of the right edge. Also, the curvature of the tube itself makes it look as if the corners of the display recede from the center. Neither effect was overly distracting; both were probably noticeable only to a picky reviewer like me.

The 1024-by-768 (horizontal by vertical) display has the same resolution as the Sony 19-inch color monitor I've been using, but the Viking monitor is much smaller and lighter. You have lots of screen space to work with, though not as much as some of the other monitors offer. On the other hand, as mentioned, the dot pitch is identical to Apple's, so readability is enhanced.

Full Page Display

The Radius Full Page Display (FPD) for the Mac II packs a lot of features into a small package. The monitor is small, with a footprint only 11 inches wide and 14 inches deep. The screen itself, with a resolution of 640 by 864, is oriented toward displaying one single page of text. And the video card itself is small.

Visually, the Radius is easy to use. You have a wide range of brightness settings. The dot pitch is slightly smaller than standard, though not uncomfortably so. There was no noticeable flicker, and the contrast was easy on the eyes.

The Radius FPD comes with some extras to expand its usefulness. The disk accompanying it has two Init files that you drop into the System Folder. These

Dealing with Multiple Monitors

After years of working on a regular 512-by-342 Mac display, I feel somewhat giddy with five large-screen monitors up and running simultaneously. With the LaserView in high-resolution mode, this configuration—consisting of the Radius Full Page display (in wide-screen mode), the LaserView, the MegaScreen 2001, the Big Picture (monochrome), and the Viking—has a total display space of roughly 5 million pixels, the equivalent of 28 regular Macintosh screens or 16 of the Apple Mac II monitors. As wonderful as this all sounds, though, there are some problems and considerations in having several monitors hooked up to a Mac II.

First, trying to lay out the relative screen positions can be a real pain, especially with five monitors and especially if you're trying to get their virtual positions to correspond to

their physical positions. I do have to congratulate Apple for its amazing vision, however. Here I had always thought that the Puzzle desk accessory that came with the original Macintosh was a mere whim, an idle expression of playfulness on the part of the Mac design team. It was actually a clever training device to help users develop the skills needed for shifting screens around. Patience, persistence, and forethought are required to maneuver those screens into the desired configuration. A hint: when you run out of maneuvering room, click on one of the other control panel icons (such as Keyboard or Mouse), then click back on Monitors. The icons representing the display screens will now be recentered, and you'll have more room to work with.

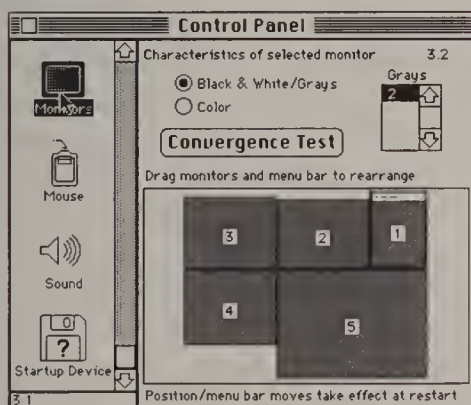
Second, many applications that open document windows limit the size of a window to the size of the start-up screen. This means, for example, that if your start-up screen is an Apple monitor (640 by 480), and you have a Radius FPD as your second screen, you cannot resize the document to take up the full screen on the FPD. Applications with this limitation include Microsoft Word 3.0 and ReadySetGo 3. On the other hand, Excel 1.04 lets you make a spreadsheet as large as you want; with the configuration above, I was able to open up a spreadsheet to 35 (standard-width) columns by 124 rows—over 4000 cells visible at once. We can all hope, of course, that the other manufacturers get their acts together.

Third, it's easy to lose the cursor. Seriously. Every so often, I find myself madly scrolling the mouse in different directions trying to find the cursor. In fact, I ended up doing it in the middle of writing that last sentence, while pausing to demonstrate the wide-screen option on the Radius FPD for my wife.

Fourth, these monitors are *big*. Not as big as the color monitors, but they do consume room. The biggest challenge I had was getting all five close enough to the Mac II so that their video cables would reach.

Fifth, what are you going to do with all those monitors, anyway? I can see a possible training environment, with each student or group of students sitting around a monitor. I can also see some kind of simulation station, with the different screens being used for different displays. But for single-user work, I've found that two screens (one larger, one smaller) are about all that I can make real use of.

Still and all, I find it amazing that, without reading any instructions, I could plug in video cards from five different manufacturers, hook up the corresponding monitors, start up, and have the system up and running with all five monitors available—with those five monitors automatically forming one large workspace. And for all my grumbling, the total configuration time was less than five minutes. I don't know of any other system anywhere with that flexibility.



Juggling Screens

Configuring five screens takes a bit of patience and skill. After selecting the monitor option in the Control Panel, you can create one large screen by sliding the monitor boxes into position. In this figure, screen 1 is where the menu bar appears. The remaining four screens are extensions of the main screen.

Monitor Features Compared

Manufacturer	Model	Type Resolutions	Shades	Size	Horizontal Density
Moniterm	Viking	gray-scale 1024 × 768	256	19"	72 dpi
Radius	Full Page Display	monochrome 640 × 864	2	15"	78 dpi
MegaGraphics	MegaScreen 2001	monochrome 1024 × 900	2	19"	75 dpi
Sigma Designs	LaserView Display	gray-scale 832 × 600 or 1664 × 1200	2 or 4	19"	63 dpi/125 dpi
E-Machines	The Big Picture	monochrome 1024 × 808	2	15"	85 dpi
E-Machines	The Big Picture IQ	gray-scale 1024 × 808	256	15"	85 dpi
Apple	Hi-Res Monochrome	gray-scale 640 × 480	2, 4, 16, 256	11"	72 dpi

create a Radius FPD module in the Control Panel that gives you three important features.

First, there's a screen saver you can set to any specific number of minutes and seconds. If the specified time elapses without any user activity, all screens attached to your Mac II go black, after which stars slowly come out (as if at night), with an occasional shooting star streaking by. A key press, mouse click, or mouse movement restores all the screens.

Second, if you're using the FPD as your main screen (with menu bar), you can ask to have a larger-than-normal (16-point as opposed to 12-point) menu bar and menus.

Third, you can change the Radius FPD to have a virtual resolution of 1024 by 864. The visible resolution remains the same; however, when you move the mouse to either edge, the display quickly scrolls. This may sound inconvenient, but it works well and gives you a large screen in a small space. And it works fine if you have multiple monitors; the Radius display scrolls until you reach the virtual edge, then the cursor passes through to the adjacent display.

The Radius FPD system that I received had some visual defects. About 1 pixel's worth of ghosting occurred along the left edge of the screen and along the right edge of windows. Also, the top corners of the display showed noticeable distortion; lesser distortion was also visible at the bottom corners.

The Radius FPD is a good choice if you have limited space for a monitor; for example, it would work well in an office where you had the Mac II system unit on the floor and just the keyboard and monitor on your desk. And the virtual screen option helps to offset the limited display size.

The Big Picture

E-Machines has two versions of The Big Picture display system out. One is monochrome; the other, The Big Picture IQ, is gray scale. Resolution is 1024 by 808; however, since this is on a 15-inch monitor, that puts the dot pitch at 90 dots per inch (dpi), so text is noticeably smaller than on a regular Mac display (though not by much—about 10 percent). The Big Picture IQ offers a choice of either monochrome or 256 shades of gray, selectable via Monitors in the Control Panel.

Visually, The Big Picture is generally good but has some deficiencies. There was some slight bowing at the top and along the left side, though not as much as in a few of the other monitors. The brightness knob is on the front (Apple was the only other monitor with one on the front), so you can adjust it easily. Contrast was not all that great; turning the brightness knob up, I could see the entire scan area surrounding the Mac desktop. And I did not like the color of the phosphor; with the brightness adjusted to a comfortable level, the screen took on a gray-green tinge that wasn't very restful.

While the Big Picture's footprint isn't much smaller than other monitors', it does have an asset in this area. The back of the monitor is shifted to the left, leaving a rectangular notch 5 inches wide by 7½ inches deep on the right side in the back. If you stick the front left corner of your Mac II there, you cut down on the overall footprint of your system. Of course, you could just put the monitor on top of the Mac II and eliminate the footprint issue altogether, but that's true of any of the monitors.

I had two other problems with The Big Pictures. First, the video cable on the monochrome version was only 18 inches long, forcing me to keep the monitor right next to (or on top of) the Mac II. Second, I wasn't able to get the Big Picture IQ system running with four other monitors. Despite repeated reconfiguration, the Mac II would always hang during start-up. I was able to get the Big Picture IQ running with more than one other monitor, though. (I have it and the Radius up and running as I type this.)

Vertical Density	Footprint	List Price
72 dpi	17.5" × 14"	\$2695
78 dpi	11" × 14"	\$1995
75 dpi	17.8" × 14"	\$1995
55 dpi/115 dpi	17.5" × 14"	\$2395
85 dpi	16" × 13.5"	\$1995
85 dpi	16" × 13.5"	\$2895
72 dpi	12" × 14.5"	\$399

MegaScreen 2001

The MegaScreen 2001 from MegaGraphics has the highest resolution of any of the displays offering dot pitch close to Macintosh standards. The resolution is 1024 (horizontal) by 900 (vertical); the dot pitch is 75 dpi, slightly denser than the Mac but not noticeably so. Those extra few vertical pixels pay off, too: you can display a complete page on the screen under Ready-SetGo 3 and still have the menu bar visible. The display itself is monochrome.

The MegaScreen 2001 has a clear, crisp image, though the unit I received had a few distortions: the left side bowed in slightly, the upper-left corner bowed up, and there was a slight loss of focus along the right edge. Brightness and contrast are both easy on the eyes, though I was unable to find any brightness control.

All in all the MegaScreen 2001 does the job well, has lots and lots of room (only the LaserView, in high-resolution mode, has a greater resolution), gives a sharp image, and is easy on the eyes.

LaserView Display System

I'm writing this section, as you might expect, on the LaserView monitor from Sigma Designs. It's in high-resolution mode right now, with some 75 lines of 12-point New York font visible at once, and the regular page-width window takes up about a third of the screen. If you're looking for maximum space on a single monitor, this is the place. Be prepared to squint a little, though.

The LaserView Display System consists of a video board and a 19-inch gray-scale monitor. It supports two resolutions: standard, which is 832 by 600; and high, which is 1664 by 1200. Under high resolution you can put very large documents, spreadsheets, and other images up on the screen. And under standard resolution, you can still fit more on the screen than on a regular Apple video monitor.

A LaserView module in the Control Panel lets you switch resolutions, adjust the size of the system cursors (arrow, watch, I-beam, cross), adjust the size of the system font, and set a time limit (5 minutes, 10 minutes, 20 minutes, or never) for automatic screen blanking. Note, however, that screen blanking affects only the LaserView display if you have multiple monitors.

In high-resolution mode, the LaserView fits the equivalent of 11.4 regular Macintosh screens (or 6.5 Apple video monitors) onto one display. Needless to say, you can fit a lot of documents onto the screen at once. The only drawbacks to the display are that the text is very tiny, and the focus is a bit blurred towards the edges. The Macintosh Operating System doesn't help; if you're opening a lot of folders, you can run up against the system limit on opened windows long before you use up your display space.

If the high-resolution mode requires visual acuity, standard resolution is a boon for the visually impaired. Putting an 832-by-600 image onto a 19-inch monitor yields a "larger than life" display that's easy to read and makes fine work a snap. There is a slight blurring toward either edge, but it has no effect on legibility. And you're still working with a display that has greater resolution than either the regular Mac display or the Apple video monitors for the Mac II.

Both resolutions support monochrome and four-level gray scale. You switch using Monitors in the Control Panel, just as you do for other monitors that support multiple gray-scale or color settings.

The LaserView display system comes with a disk containing three files. One is an Init file that you place in the System Folder; this creates the LaserView panel in the Control Panel. Another is the LaserView 12-point font, which replaces Chicago 12-point as the system font if you ask for the large system font. The last is a diagnostics program that checks the memory on the LaserView video card and puts up a number of images and patterns on the display to test it out.

While it is possible to switch resolutions using the LaserView, there are some considerations. If you start up in high-resolution mode, then switch to standard resolution, everything outside of the upper-left quadrant of the high-res display becomes inaccessible—disk icons, the Trash Can, windows, documents, and so on—until you go back into high resolution. In a similar fashion, if you boot up under standard resolution, then switch to high resolution, the disk icons and Trash Can stay in the upper-left quadrant. You can, of course, pick them up and move them to the right, but if you then switch back to standard resolution, they're inaccessible until you go back to high resolution. What's more, some applications, if opened under standard resolution, won't let you resize the document

window beyond the limits of the standard-resolution display (though you usually can move it around the high-resolution display with no problem). Also, if you plan to do any switching and you have multiple monitors, be sure that you don't have monitors positioned (in the Monitors section of the Control Panel) to the right of or below the LaserView. (The Radius avoids this problem by requiring a restart for the wide-screen/narrow-screen option to take effect.)

One other bug—really a lack of functionality—showed up with a public domain utility I used. It's an Init program named MFMenu (from IMI Software) that



If I had to pick just one monitor to have with a Mac II, it would be the Moniterm Viking.

creates a pop-up menu to select among applications running under MultiFinder. You make the menu appear by clicking on the right end of the menu bar, just past the application icon. I was unable to get MFMenu to work with the LaserView system as the main screen, though it worked with all the other monitors, even with the LaserView as another menu.

Well, you didn't think it was going to be easy switching between resolutions on the fly, did you? Even given the minor hurdles above, it's something of a tribute to both Sigma Designs and Apple that I can configure a system with five monitors and then switch resolutions on one of them.

Apple High-Resolution Monochrome Monitor

To write this section, I've switched to the Apple monitor, menu bar and all. After all those other monitors, I feel very cramped. I can get only 28 lines of 12-point New York font in my Microsoft Word window, and a normal page-width window takes up 80 percent of the screen. A 640-by-480 resolution is quite a come-down, and on an 11-inch screen at that.

On the other hand, this is the nicest monitor visually. There is no bowing along any side, and just a hint of defocusing at the edges, visible only through a magnifying glass. What's more, this is the only monitor that has both brightness and contrast controls; the others had only brightness controls (one of them didn't even have that).

The footprint on this monitor is quite different from the others: 12 inches wide by 14½ inches deep. The monitor is almost too low to sit by itself on a desk;

it really needs a monitor stand (which Apple sells), or it needs to sit on top of the Mac II itself.

This monitor, with the Apple video card, also offers the greatest variety of gray shades. With full memory installed on the card, you can have 2, 4, 16, or 256 shades of gray. And if you're on a stringent budget, you can get the card without the extra memory and still have 2, 4, or 16 shades of gray.

Conclusions

I've now switched back to a Sony 19-inch color monitor, and the lack of crispness (compared to the monitors above) is noticeable. Don't get me wrong—the Sony display is very nice, it just isn't as sharp as the monochromes. On the other hand, the little Apple icon is now in color again.

Price considerations aside, my first choice—if I had to pick just one monitor to have with a Mac II—would be the Moniterm Viking. The display is easy on the eyes, glare is nonexistent, it has 256 gray scales, and it is the only monitor to offer exact Macintosh density. It would also be my first choice as a second monitor, if I already had the Apple monochrome monitor.

If I approached the monitor question as a power user, I would probably select the LaserView Display System. I might squint and hunch over a lot, and have to work around a few glitches, but I could have more applications up and clearly visible than on any other screen.

If the extra resolution is important, and gray scales aren't, then the MegaScreen 2001 is a good alternative to the Moniterm Viking. And it's cheaper, too.

If I were going to pick two monitors, I'd probably pick one of the above, and then the Radius Full Page Display. The Radius would make a great second monitor to the LaserView, since you could open documents to full size and see them a lot more clearly than on the LaserView itself.

On a tight budget? Well, the Apple monitor is sharp, cheap, and versatile. And you can plug any number of RGB monitors into the same video card (see "Looking Through the Mac II Kaleidoscope," *Macworld*, December 1987).

I'd like to give a recommendation of some kind to the Big Picture systems, but they had the most visual defects and the display itself was very tiring on the eyes.

Ultimately, of course, the decision is yours. You know what you like best, you know what you need, you know what you can afford. And the bottom line is this: there's a variety of monitors to choose from, and more coming on the market all the time. □

See *Where to Buy* for contact information.

SPECIAL
EVENT

Technology and Issues Conference

Macworld's second annual meeting

of hardware and software developers

June 1-3, 1988

Sessions will include:

Graphics

The User Interface

QuickDraw

MultiFinder
and Multitasking

Desktop Publishing

Video

Animation

HyperCard

Networking

Scanners

Color Printing

Developers who attended last year's Technology and Issues Conference demanded another chance to get together and thrash out the important issues facing the Macintosh development community. So Macworld is pleased to announce the second annual Technology and Issues Conference in San Francisco, June 1 through 3, 1988.

This gathering brings together third-party Mac hardware and software developers for intense discussions of technical issues. Leading Macintosh developers will speak on their areas of expertise in sessions that include plenty of time for give and take. The Technology and Issues sessions and informal discussions will provide a unique opportunity to influence standards, shape technological developments, and hear from Apple representatives.

To make sure that the sessions remain small enough for productive discussion, space is limited. Please register early to avoid disappointment. For registrations received before April 6, the fee will be \$495. After April 6, the registration fee will be \$595.

Yes, I'm interested in attending the Macworld Technology and Issues Conference in San Francisco. Please send registration details.

Name _____ Title _____

Company _____

Address _____

_____ Zip _____

Send to: Technology and Issues Conference, *Macworld* Editorial, 501 Second St., San Francisco, CA 94107

Build Your First HyperCard Application

by Franklin Tessler

I'll bet many Macintosh users have thought of terrific applications, but have let their ideas wither on the vine because they lacked the time or skill necessary to transform the concepts into working programs. HyperCard and its built-in language, HyperTalk, have rejuvenated many people's interest in programming. Look on any bulletin board system today and you'll find long lists of public domain and shareware stacks; many of these applications would have taken months (or years) to write using other, earlier languages. By making programming accessible to more users, HyperCard has tapped into a fresh pool of creative talent.

For some, though, the product has proved frustrating. Although you can do a lot in HyperCard without any programming, its real potential lies in HyperTalk. And while HyperTalk's syntax is very English-like, it still uses many of the concepts of traditional programming languages like BASIC and Pascal. So how do you learn HyperTalk? Certainly not from Apple's manual: it barely touches on the subject. Danny Goodman's book *The Complete HyperCard Handbook* (Bantam Books, 1987)

does an excellent job of describing HyperCard and HyperTalk, but it doesn't give a sense of where to start in developing a HyperCard application. So I suspect that some people don't progress much beyond experimenting with some basic HyperCard functions; they never go on to write a complete application.

How to Begin

This article offers the guidance you need to begin building rudimentary HyperCard applications. I'll assume that you're already familiar with basic HyperCard concepts and that you've played around with the message box a bit. As an example, I'll show you how to design a simple application called Form Editor that lets you select, modify, and print form letters that have already been created in a word processing program and saved as text files. This HyperCard application is not something you should expect to make productive use of; it is intended only as an exercise to help you learn how to build your own applications. To get the most out of this tutorial, you should actually work through the steps yourself.

Novice HyperTalk programmers should be aware of two pitfalls. First, don't get caught up in trying to make stacks that

look nice—forget about the paint tools until you've mastered the essentials and proven that your programs actually work as you want them to. Second, don't worry if your programs aren't as elegant or compact as they might be. Because HyperTalk is so modular, you can write an application in rough pieces and fine-tune it later.

One final caveat: when opening, reading, writing, closing, and printing files, HyperCard is fussy about the exact position of files within the Hierarchical File System (HFS). You will probably have to modify the scripts in this article and add pathways (the sequence of folders the program must open to find a file) to make the stack work properly on your system.

Plan the Application

As with any complex task, time spent doing some careful thinking and planning at the outset will streamline the work of writing a HyperCard application. Although there aren't any hard and fast rules, it's useful to have a set of guidelines on which to base your work. The best way to plan is to forget all about HyperCard for a moment and imagine how you want the application to work. It may help to sketch your ideas on paper.

First, break down the application into specific functions and write these down on paper. By *functions* I mean individual

Franklin Tessler is a Macworld contributing editor and a founder of the Los Angeles Macintosh User Group. He also uses the Mac in his other life as a radiologist.



A strategy for HyperCard beginners

Call the stack **Form Editor**. Before saving, make sure that the box for copying the current background is not checked; otherwise the new card's background will be identical to the stack currently open.

The screen should now display a blank card that will serve as the application's first window. Choose "Card Info..." from the Objects menu and enter the name **ListCard**. Click OK, and then add a second card to the stack by selecting New Card under Edit. Call it **EditCard**. Return to the first card by pressing ⌘-2.

tasks like opening a file, manipulating data, and printing. For a simple application like Form Editor, the list of functions has only three items.

Group Related Tasks

The next step in the planning process is to group similar functions and assign them to windows. In most Macintosh programs, related actions take place in separate windows. For instance, in a home finance application you might enter check transactions in one window and reconcile accounts in another. Go down the list of functions you created earlier and arrange them so that the application user will be able to complete as many steps as possible in a single window. It might help to sketch a flow chart showing the interrelationships between functions and the sequence in which they will probably be enacted.

Create the Cards

The next step is to translate this conceptual design into a HyperCard stack. Based on what we found by collecting tasks into logical groups, the best design for this form letter application will require two windows. In HyperCard terminology, windows are *cards*. (One of HyperCard's limitations is its inability to deal with more than one Macintosh window at a time.)

Since our design dictates two windows, we need a stack with two cards, one for selecting the appropriate form letter and another for editing and printing. So let's begin the process of constructing an application by launching HyperCard and selecting New Stack from the file menu.

Create Fields and Buttons

Once you've created the necessary cards, you must add the components that will make each card work. You do this by translating each function in your paper design into the appropriate HyperCard feature.

HyperCard must handle all of an application's tasks with three types of features: fields, buttons, and graphics. Examine each window critically, and translate each design function into the appropriate HyperCard feature using the following guidelines:

- Some items contain text that users must edit. Represent these tasks with HyperCard's fields.
- Some items don't require data entry but permit users to initiate actions. In HyperCard, such actions correspond to but-



Five-Step Strategy

Using HyperCard as the foundation, you can build finished applications by following this sequence of five steps.

tons—active regions in the window that respond to user actions like mouse clicks.

- A window may also contain graphics that add visual punch but don't change at all—window dressing. As I've said, leave the creation of graphics for last.

The first card in this application lists form letters available to the user. To create the list, choose New Field from the Objects menu and resize the field so that it fills most of the card, leaving some room at the bottom. Next, pick up the field tool, double-click anywhere in the field to bring up its attributes box, and enter the field's name (**ListField**), font, size, and style. Just in case the list of form letters grows longer than the field size, make the field scrollable by clicking on the appropriate radio button (see Figure 1). Finish by entering the list of names into the field (see Figure 2).

Although there's always an easy way back to HyperCard's Home stack via the \mathbb{H} -H shortcut, you can build a more elegant escape hatch into an application by adding a button. In contrast to a field, a HyperCard button's only job is to respond to

such user actions as mouse clicks. Create a new button (choose New Button in the Objects menu) and change its name to **Return Home** by double-clicking on it with the button tool. Use the same tool to drag the button to the unused area below ListField.

Now, we're ready to prepare the second card, in which users will edit and print form letters (see Figure 3). Go back to the second window: create a field called **EditField** and add two buttons, one to return to the list of names (Return) and another to print the letter after it's been edited (Print).

Writing Scripts

Scripts are HyperCard's lifeblood—they tell cards, fields, and buttons what to do and when. Although scriptwriting isn't simple, HyperTalk is so flexible that it's easy to experiment without getting caught up in details of syntax. It's crucial not to become too concerned that your scripts aren't as compact or elegant as they could be. Just get them working first—you can fine-tune them later.

So far, we've only been working with inanimate objects—fields, buttons, and cards. To breathe life into them you have to add the scripts that control their behavior. In general, think of scripts as sets of instructions for responding to Macintosh events like mouse clicks, text selections, menu selections, key presses, and cursor movements.

Whenever an event takes place, HyperCard broadcasts a message to anyone listening (HyperCard even sends an **idle** message when nothing is happening). Although it can be confusing at first, it's important to understand the concept of mes-

sage hierarchy: a message can originate almost anywhere, but where it ends up depends on who's listening for it. The role of a HyperTalk script is to wait for, trap, and act on messages that relate to a specific button, field, or card. All other messages are passed along, routed up through a kind of chain of command (see Figure 4).

Write Your First Script

For the first card in our application, we'll need a script that tells the ListField how to respond when the user chooses a form letter. To enter the script, select ListField, double-click on it, and click on Script to bring up the script editor (see Listing 1).

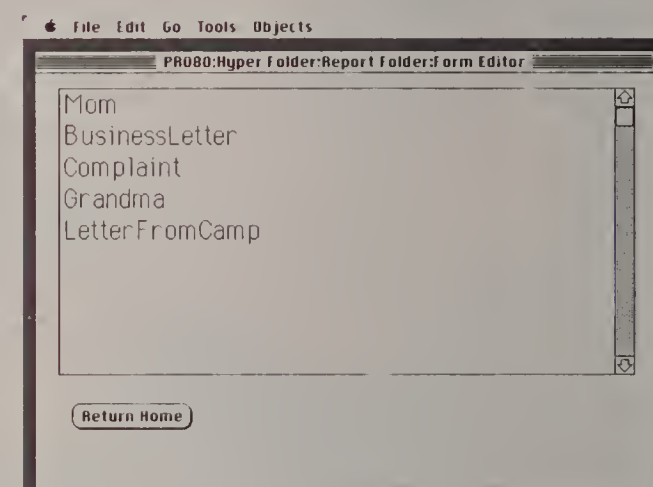


Figure 2

The first card in the stack displays a list of form letters. The Return Home button exits to the Home card.

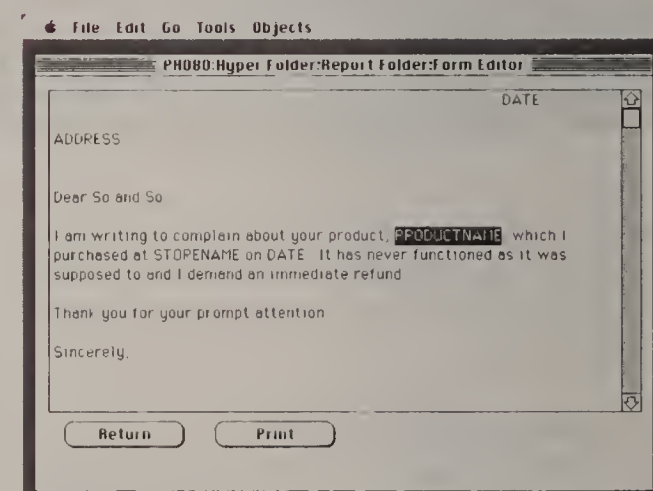


Figure 3

The stack's second card presents a form letter for editing. The two buttons handle returning to the first card and printing.

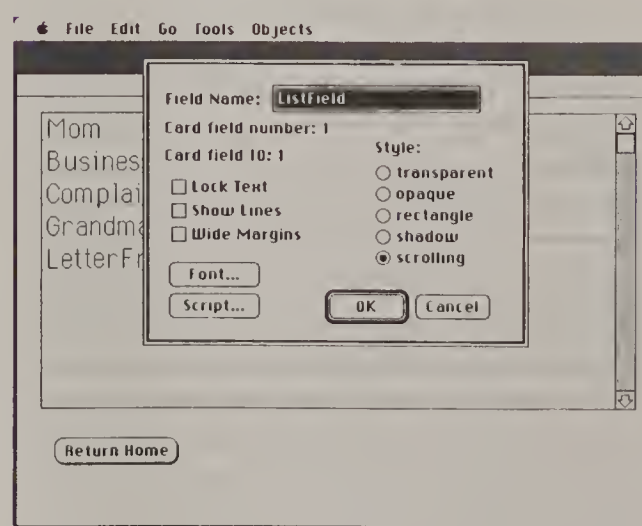


Figure 1

This dialog box lets you change the field's attributes, including its font and whether or not it includes a scroll bar.



Figure 4
Scripts work by trapping messages that HyperCard broadcasts through a hierarchy of objects. In the illustration, the message (represented by a marble) will first check to see if any scripts are attached to the field or button. If not, the message passes on the each subsequent step until it finds a matching handler or returns control to HyperCard. This message will be trapped by a script attached to the card's background.

As you type, notice how HyperCard automatically formats the script to make it easier to follow.

Your first challenge is to get HyperCard to recognize that the cursor has entered the field and selected a name by double-clicking on it. Fortunately, HyperCard sends a **mouseWithin** message whenever the cursor is inside a card, field, or button: the first line tells HyperCard to follow the script's commands whenever the field receives a **mouseWithin** message.

The second line tells HyperCard to exit the script if no text has been selected. Otherwise the selection is placed in a variable called **filename**. (The file name must be prefixed with the correct pathway to the file in the Macintosh filing system.) Variables are temporary receptacles for data and can be created on the fly as needed. The **if...then...else...** sequence is an example of a control structure, a powerful way of making HyperTalk take action (in this case, follow a pathway) only when certain conditions have been met.

To retrieve the appropriate form letter, assume that each one is stored in a separate text file with the same name as the one in the list. The next part of the script opens the variable **filename** and reads its contents

into another variable called **lettertext**. Here the script makes use of another HyperTalk control mechanism, the **repeat loop**: the commands between **repeat** and **end repeat** continue to cycle until the specified conditions have been satisfied. In this case, the script reads the file in large gulps, 16,384 characters at a time, and dumps them into a special HyperTalk variable called **it**. As long as there's more text to read, **it** isn't empty, so HyperCard tacks the most recent chunk of text onto the variable **lettertext** and goes back for more. At the end of the loop, **lettertext** contains all the text in the file.

The script ends by closing the file and transferring to the second card, **EditCard**. The contents of **lettertext** are then placed into the field **EditField**. The last line in the script informs HyperCard that the sequence of commands is finished.

More Scripts

The script for the Return Home button is simpler (see Listing 2). Since buttons usually respond to being clicked, the button needs to know exactly when the mouse has been released with the cursor

The only remaining tasks are to write scripts for the two buttons on the editing card. The first button's script takes the user to **EditCard** (see Listing 3). The Print button's script needs a bit more explanation. Although HyperCard has some printing capabilities, it's sometimes preferable to handle printing tasks through another application, such as a word processor. The print script saves the edited form letter in a text file called **PrintFile** and then prints that file using **MacWrite** (see Listing 4). When printing is done, HyperCard automatically starts up again and returns to where it was.

Further Explorations

It should be obvious that as the application stands, it doesn't do much. For practice, you might want to expand on it. Try adding a feature or two of your own, such as inserting the date into the form letter. The goal is not to write a useful program, but to get a feel for constructing an application and working with it. You might also find it instructive to take a familiar piece of software and consider how you might emulate it in HyperCard.

Listing 1

```
on mouseWithin
  if the selection is empty then exit mouseWithin
  else
    put "Hard Disk:" & the selection into filename
    open file filename
    repeat
      read from file filename for 16384
      if it is empty then exit repeat
      put it after lettertext
    end repeat
    close file filename
    go to card "EditCard"
    put lettertext into card field "EditField"
  end if
end mouseWithin
```

Listing 2

```
on mouseUp
  go home
end mouseUp
```

Listing 3

```
on mouseUp
  go to card "ListCard"
end mouseUp
```

Listing 4

```
on mouseUp
  open file "Hard Disk:" & "PrintFile"
  write card field "EditField" to file "Hard Disk:" &
    "PrintFile"
  close file "Hard Disk:" & "PrintFile"
  print "Hard Disk:" & "PrintFile" with MacWrite
end mouseUp
```

over it. This situation is neatly handled by having the button's script look for a **mouseUp** message; to make things easier, HyperCard automatically puts **on mouseUp** and **end mouseUp** commands at the beginning and end of every button script. The other line is a single **go home** command telling HyperCard to return to the Home card when you click on the button.

Another way to improve your skills is to dissect other people's scripts and modify them—many user groups and bulletin boards have more public domain stacks than they know what to do with. As you write new scripts, examine them critically to see if you can improve them by shaving off a few lines here or there, or by adding new functions. Above all, don't be afraid to experiment and share your ideas with others. □

See *Where to Buy* for contact information.

Installing Memory



How to install extra memory on a Mac Plus or a Mac SE

Mucho memory. Is it a silly fashion craze? Smart Macs everywhere are sporting more memory this year, and for good reason. With the advent of MultiFinder, keeping multiple applications in memory is now de rigueur. Most business, desktop publishing, and graphics programs require hundreds of kilobytes of memory each. And this year also gave rise to the software equivalent of big and tall clothing, HyperCard and 4th Dimension, each requiring 700K under MultiFinder. These programs may be a portent of next year's fashion in memory demands.

Fortunately, it's easy to expand the memory capacity of a Mac Plus or Mac SE from 1 megabyte to as much as 4. All it takes is several hundred dollars. Memory has become a real commodity, with new brands appearing regularly and prices changing frequently.

Whenever memory upgrades are discussed, one question inevitably arises: how easy is it to do it yourself? The answer is that a number of experienced Mac users have succeeded in upgrading their own Mac Plus or SE memories without mishap. That's *not* to say you should attempt a memory upgrade yourself. In fact, it's inadvisable for a number of reasons.

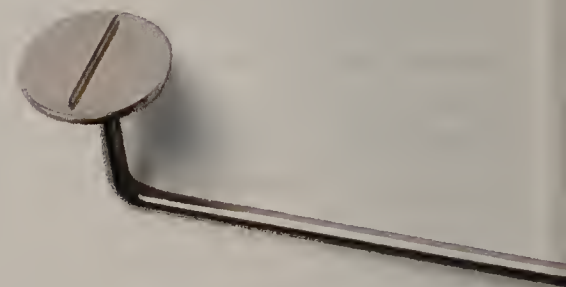
Performing your own upgrade exposes you to the risk of serious—even life-threatening—electrical shock, especially



by Lon Poole

when the machine is plugged in, but even when it isn't. The economic advantages of doing it yourself are dubious. For example, you'll need at least \$30 to \$50 worth of tools you probably don't already have and may not need after using them once. Then there's also the risk of breaking delicate internal parts that are expensive to replace. More than a few veteran Mac case crackers have broken a picture tube or two. You can also ruin memory chips or other logic-board components by exposing them to small charges of static electricity.

Apple advises that all memory upgrades be performed by authorized dealers and warns that you will abrogate the warranty if you upgrade your machine yourself. This means that you'll be covering the full cost of any mishap if you do your own upgrade. Weigh all that against the cost of having an experienced technician do the work and assume the liability. You'll pay \$25 to \$50 for labor and incur shipping or transportation costs. True, if you do it yourself, you will not lose the use of your



Lon Poole is a Macworld contributing editor who has been educating Macintosh users since the machine was introduced.

But remember—if you insist on doing the upgrade yourself, you're on your own. *Macworld* does not endorse any of the upgrade packages mentioned here, and assumes no liability for property damage or personal injury that may result from performing your own upgrade. Hopefully, after seeing how it's done, you won't feel the urge to do it yourself.

Choosing Memory

A standard Mac Plus or Mac SE has 1MB of memory on four Single Inline Memory Modules (SIMMs). These SIMMs are pieces of plastic about 3½ inches long by ⅝ inch high. Each module has eight memory chips across its face and metal connectors along one edge. The SIMMs snap into special sockets on a Mac Plus or Mac SE logic board and are easily replaced with higher-capacity memory. Various memory upgrade products make it possible to increase memory in a Mac Plus or Mac SE from 1MB to 2MB, 2.5MB, or 4MB. The memory upgrades can take several forms, including regular SIMMs, long memory modules, and adapter cards.

When deciding which type of upgrade to buy, keep several factors in mind. Cost is certainly important. Be sure to shop around before making a purchase. Think twice, though, about an upgrade that saves you \$50 or \$75 but forces you to listen to a cooling fan you can't stand, or makes adding a big screen or another upgrade impossible later on. Try to get memory that you can take with you when you advance to a new Mac. And don't pick something that obviates future memory expansion, unless you're very sure you'll never want more memory. Just two years ago having 1MB seemed incredibly luxurious. Today it's merely adequate.

SIMM Swaps

The 256K SIMMs that come with a Mac can be replaced in pairs with 1MB SIMMs of about the same size. Replacing one pair yields 2.5MB and leaves two of the original 256K SIMMs unused. Replacing all the SIMMs yields 4MB, with all four original 256K SIMMs left over. Note that you could remove all four 256K SIMMs and install only two 1MB SIMMs, leaving all four original 256K SIMMs unused and two SIMM sockets empty. It makes no sense to do that, though. You might as well use two of the 256K SIMMs you already own.



A SIMM may have either of two styles of memory chips. The new-style memory chips, called surface mount, are smaller than the old style, called DIP (Dual In-line Package). SIMMs with DIP chips may be a bit cheaper; however, their bulk can make it impossible to add an expansion card to a Mac SE.

The SIMMs you buy for a Mac Plus can be used on a Mac SE. If you buy SIMMs that have 120-nanosecond memory chips (not 150-nanosecond chips), they will work on a Mac II as well.

Several companies make 1MB SIMMs. For example, Apple's 2MB Memory Expansion Kit, Dove Computer's MacSnap 2S, and



Mac while it is in the shop. (Assuming the operation goes smoothly.) But the procedure takes time—figure half an hour to two hours, depending on your experience inside a Macintosh—and this doesn't include the time it takes to acquire the necessary tools and the extra time involved if something goes wrong.

All in all, it makes sense to let a trained professional do the work, and *Macworld* recommends that you do so. However, some of our readers may simply want to know how a Mac upgrade is performed. The following pages show the steps involved in upgrading the memory of a Mac Plus or a Mac SE beyond 1MB.



Step 2.

Remove screws and battery cover. But first take precautions to avoid shock.

MacMemory's MultiSIMM include two 1MB SIMMs that use surface-mount chips. The MacSnap 2H is the same except it uses the larger DIP chips.

Alternatives

There are other types of memory upgrades, such as MacMemory's MaxPlus Mega and Levco's One Plus One, that work only on a Mac Plus. They have been cheaper than 1MB SIMMs because they reuse all four standard 256K SIMMs.

The MaxPlus Mega upgrade uses a long memory module on which the four original 256K SIMMs sit piggyback. The piggyback module fits in the first SIMM socket on the Mac Plus. This puts 1MB in the space formerly occupied by 256K. The MaxPlus Mega includes a regular 1MB SIMM for the second SIMM socket, providing a total of 2MB. The last two SIMM sockets can be filled at any time with another pair of SIMMs, either 1MB or 256K. The 256K SIMMs may be hard to find, however, since no one sells new ones and all the old ones are in use on the piggyback board.

The MaxPlus piggyback module is tall enough when installed to cover the Mac's processor chip. That precludes adding a big screen to your Mac Plus, because the screen must connect to the processor. If you later had to have a big screen, you would have to replace the piggyback module with a regular 1MB SIMM.

The One Plus One memory upgrade is a large rectangular card that sits above and parallel to the Macintosh logic board. It has SIMM sockets for the four 256K SIMMs that come with the Mac Plus, and it has 32 additional memory chips, for a total of 2MB. Two cables connect the rectangular adapter card to the first two Mac Plus SIMM sockets. The other two Mac Plus SIMM sockets are open for future memory upgrades, but can be filled with regular SIMMs only—either two 256K SIMMs, for a total of 2.5MB, or two 1MB SIMMs, for a total of 4MB. As with the MaxPlus, finding extra 256K SIMMs for the second two SIMM sockets may be difficult.

Levco includes a small fan with the One Plus One upgrade, which uses many more chips than regular SIMMs. All those chips generate heat. The fan is very quiet; you're unlikely to hear it over a hard disk.

The One Plus One board leaves enough space to attach some brands of big screens to the processor of your Mac Plus. If the screen's adapter card mounts directly above the logic board, it is probably incompatible with the One Plus One. If it mounts elsewhere inside the Mac and connects to the processor via a ribbon cable, it probably is compatible.

Installation

Gaining access to the logic board inside the Macintosh is the most difficult part of the upgrade procedure. The accompanying photos, diagrams, and text show how a memory upgrade is accomplished.

1. Get Tools

A successful and trouble-free installation job depends on using the right tools. Using makeshift tools increases the chances of damaging the Macintosh, the memory modules, or yourself. Use the best tools you can get.

Torx T-15 Screwdriver Mac Plus and Mac SE cases close with unusual screws. Loosening the screws requires a screwdriver with a Torx T-15 tip, a long shaft, and a long tip—at least 5 inches from the tip of the shaft to where the shaft emerges from the handle. Many hardware stores carry them. They are also available from manufacturers (such as Vaco), and Levco has been known to sell them.

Case Spreader Opening a Mac Plus or Mac SE without marring its case requires a case spreader. Before the back can be pulled off, it must be separated from the front bezel with a case spreader. There are several types of spreaders. Mentaurois makes one by machining flanges on a door hinge and welding on a pair of handles. It also makes another version with welded-on flanges, which costs more and doesn't work as well.



Step 3.
Remove programmer's switch using a flat-blade screwdriver.



Step 4.
Use a case spreader to separate the front bezel from the case back.

Icon Review sells a case spreader with a Torx T-15 screwdriver at the other end of its long handle. The spreader is designed for one-handed operation, but its flanges are a bit thick and can be hard to fit into the groove between the front bezel and case back.

The Mac Opener takes a different approach. It looks like a large dental mirror with a ridge welded to its face. To spread the case, insert the ridge into the groove between the Mac's front and back casing and twist. The long handle has a T-15 screwdriver tip at the opposite end.

Antistatic Wrist Strap and Mat Technicians wear antistatic wrist straps and work on antistatic mats to avoid damaging components on the circuit board by static discharge. These items are like seat belts: failing to use them once may not cause a problem, but continually ignoring them leaves the Mac open to serious damage.

Digital Voltmeter If you're planning to install a memory upgrade in a Mac Plus other than regular SIMMs, the power supply outlet should be checked and adjusted. A high-quality digital voltmeter is necessary to get an accurate adjustment between 4.98 and 5.0 volts. Digital voltmeters usually cost \$100 or more.

Wire Cutters The lead to a resistor must be cut when upgrading from 1MB to 2MB, 2.5MB, or 4MB.

Soldering Iron and Solder When upgrading to an even 2MB, a 150-ohm resistor must be soldered onto the logic board.

Small Plastic Screwdriver The Mac Plus power supply may need adjusting after installing additional memory. This requires a small screwdriver with a plastic tip to prohibit video interference. While the case is open, you can use the screwdriver to tweak the video adjustments for best brightness, focus, width, and height. Metal screwdrivers can throw off adjustments.

Flat-Blade Screwdriver It may be necessary to pry some things with a thin flat-blade screwdriver.

2. Remove Screws

There are two screws near the ports and two more in the recessed handle at the top of the Mac. The Mac Plus has a fifth screw behind the cover of the battery compartment.

CAUTION: When performing surgery on the Mac, you should unplug it to avoid the danger of electric shock. The only exception to this rule is after the upgrade has been installed, when it is necessary to adjust the power supply. During this phase of the operation the risk of electric shock is especially high and special care should be taken to avoid touching dangerous components.

Even when the Mac is turned off and unplugged there is danger of receiving a life-threatening shock. High voltage is present on the analog board on some of the leads of the flyback transformer. Also,

if the high-voltage lead to the picture tube is frayed it can generate a dangerous shock. Don't remove the paper backing on the analog board and don't work on a board with damaged paper backing.

Always wear rubber-soled shoes and avoid touching any component unnecessarily. Especially avoid touching circuitry (generally, any exposed metal surfaces). When possible keep one hand free, and avoid touching grounded objects with that hand.

3. Remove Programmer's Switch

When a programmer's switch has been installed on the side of the Mac near the printer port, pry it off using a flat-blade instrument such as a screwdriver.

4. Spread Case

The Mac's case back sticks to the front bezel and can't easily be pulled off. Use a case spreader to separate the two.

5. Remove Case Back

Place the Mac on its face and lift off the back part of the case, setting it aside, out of the way. Be careful not to scratch the surface of the tube when placing the Mac face down.

6. A Firm Grounding

Some of the Mac's internal components can be damaged by static discharge. Technicians avoid this by wearing a grounding wrist strap on the hand they use to touch static-sensitive components. If



Step 7.
After removing the case back, lift off the RF shield.



Step 8.
Disconnect the internal cables from the logic board. Here, the power/video cable is being disconnected.

none is available, the metal chassis can be touched, before touching any other parts, to dissipate static electricity.

7. Remove RF Shield

The next step requires the removal of the Radio Frequency Shield, the metal foil under the logic board, which prevents the Mac from transmitting radio interference to other electric devices. Double-check to make sure the Mac is unplugged. The logic board lies flat on the bottom of the Mac. The analog board sits upright on the right side of the Mac as you face the back of the computer. The analog board contains most of the high-voltage components, including the flyback transformer and the power supply. It's not necessary to remove the analog board, and you should only touch it when absolutely necessary. Lift off the RF shield and place it inside the empty case.

8. Disconnect Internal Cables

Several cables run from the logic board to other internal components. The Mac must be upright so the cables can be disconnected.

Ribbon cables connect the internal disk drive or drives to the main logic board. All internal drive cables must be unplugged from the logic board and tucked out of the way.

The power/video cable runs from the analog board to the logic board. Disconnect it from the logic board. On an SE

there is a catch on the connector that attaches to the logic board that must be released. On a Mac Plus there is no catch and the connector can only be removed by pulling firmly.

CAUTION: The power/video cable will resist being disconnected. If yanked forcefully, the cable will come free suddenly and cause the pulling hand to smack against the end of the picture tube. The tube will gasp and give up the ghost. So steady one hand with the other while working the connector loose. A new picture tube costs more than \$100 installed.

If the Mac has an internal modification such as a big-screen adapter, internal hard disk, or accelerator card, there may be other cables to disconnect at this time. Installations vary, so it's necessary to study the one at hand and determine what else needs unplugging. Try to disconnect all wires from the logic board. It may not be possible to disconnect everything at this point; you may have to pull the logic board free first.

9. Remove Logic Board

Clear a space large enough to set the logic board on after removing it. Place the Mac with its screen face down.

On a Mac SE, it's necessary to lift up the logic board about a quarter inch and pull the right edge outward, as if opening a door. After this, the left edge should be pulled away from the chassis. The Mac SE logic board will still be connected to the speaker, so the speaker wire should be unplugged at this time. If there are other

wires still connected, unplug them too.

On a Mac Plus, the logic board is designed to slide out. Grasp it firmly and pull up. It's probably not possible to slide the logic board out if it has an adapter card attached. In that case, use a flat-blade screwdriver to gently pry the right edge of the logic board away from the chassis bracket. Then you can swing the board out like a door. It may help to slide the logic board up a quarter inch before prying its right edge free.

10. Remove SIMMs

Place the logic board on a nonstatic surface (not a rug), chips face up and SIMMs near you. Remember, a static spark can ruin SIMMs. Avoid the circuitry; touch the SIMMs only on the two edges that have no circuitry. Using both hands, spread apart locking tabs on one SIMM with your thumbs (it helps to have thumbnails) and pull the SIMM toward you with your index fingers. Don't use excessive force. Place the SIMMs on a nonstatic surface after removing them.

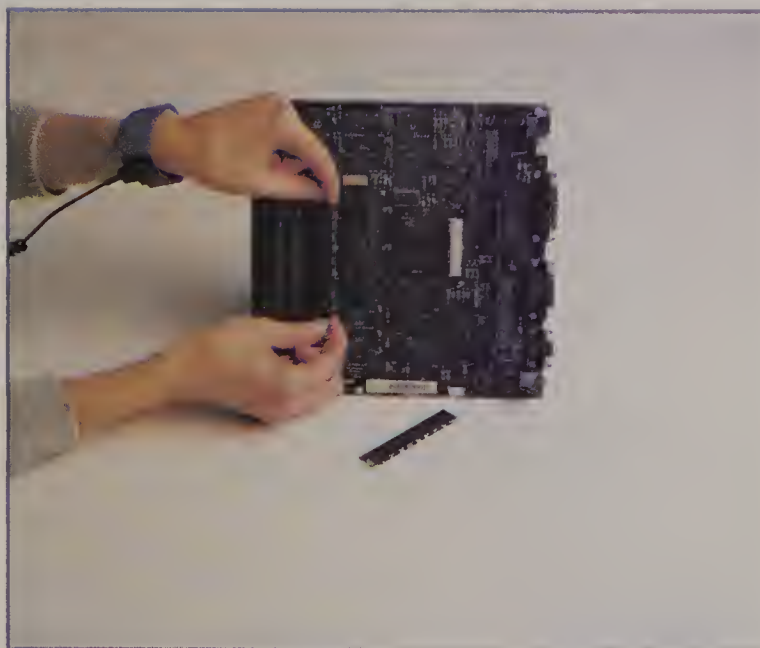
11. Install Replacement Memory

There are some rules about populating SIMM sockets on Mac Plus and Mac SE logic boards. You must fill an even number of sockets—two or four. If you only fill two sockets, they must be the first two sockets. Each pair of sockets must have the same denomination SIMM, either 256K or 1MB.



Step 9.

Slide out the logic board. On an SE the procedure is somewhat different.



Step 10.

Remove each SIMM by spreading apart the locking tabs and pulling the SIMM away from the logic board.

If any 1MB SIMMs are present, the first two SIMM sockets must contain 1MB SIMMs. As a result, a Mac Plus or Mac SE can have a total of 0.5MB, 1MB, 2MB, 2.5MB, or 4MB of RAM. No other sizes work. "Memory Rules" shows all acceptable SIMM configurations.

If installing 1MB SIMMs, first fill the sockets nearest the center of the logic board on a Mac Plus or the leftmost sockets on a Mac SE. Fill extra sockets with 256K SIMMs removed in the last step or with additional 1MB SIMMs. Keep the leftover 256K SIMMs as spares or sell them if you can find a buyer.

If installing a long piggyback module on a Mac Plus, put the old 256K SIMMs on the piggyback module. Then put the module in the SIMM socket nearest the center of the logic board. Put a 1MB SIMM in the second socket. Fill the other two sockets with 256K SIMMs or 1MB modules of any kind, or leave the sockets empty.

If installing a Levco-style adapter card, first put the recently removed 256K SIMMs on it. Then plug its two ribbon cables into the two SIMM sockets nearest the center of the logic board and attach the card to the logic board. Leave the remaining SIMM sockets empty, or fill them with regular 1MB or 256K SIMMs.

It's important to follow the upgrade manufacturer's specific instructions, if there are any.

12. Adjust RAM SIZE Resistors

The presence or absence of two 150-ohm resistors on the main logic board tells the Mac how much memory is installed. The words RAM SIZE are stenciled on the logic board to identify these resistors. On a Mac Plus, they are located diagonally opposite the keyboard connector. One resistor has the labels R8 and 256KB. The second resistor has the labels R9 and 1 ROW. On a Mac SE, the resistors are located above the SIMM sockets. One resistor has the labels R35 and 256KB. The other resistor has the labels R36 and ONE ROW. The 256KB or 256K BIT resistor is present if the first two SIMM sockets contain 256K SIMMs, and is absent if they contain 1MB SIMMs. The resistor labeled 1 ROW or ONE ROW is present if the last two SIMM sockets are empty, and absent if they're occupied. "Memory Rules" correlates RAM SIZE resistor placement with SIMM configuration.

Upgrading from 1MB to 2-, 2.5-, or 4MB requires clipping the resistor labeled 256KB or 256K BIT. Clip one lead close to the logic board and pivot the resistor aside. Don't clip the resistor off the board entirely. Make sure the clipped lead doesn't touch anything else after it's pivoted. That way the operation is reversible with just a little solder.

An upgrade from 1MB to exactly 2MB leaves the second pair of SIMM sockets empty. This configuration requires that a 150-ohm resistor be installed in the location labeled 1 ROW or ONE ROW.

Memory upgrades other than regular SIMMs may have different rules for configuring the RAM SIZE resistors. Some installers use jumper wires instead of resistors, or they use resistors of a slightly different value. Such upgrades may also install a jumper at other, electrically equivalent locations on the logic board.

13. Reinstall Logic Board

A Mac Plus logic board upgraded solely with regular SIMMs should slide easily into the chassis. If the logic board has a long piggyback module or an adapter card installed, it probably won't slide into place. To install a thick logic-board assembly, place its left edge in the chassis and swing it into place as you would close a door. If necessary, use a flat-blade screwdriver to pop the right edge of the logic board into the track on the chassis.

A Mac SE logic board is designed to be swung into place. Reconnect the speaker wire at this point. After you insert the left edge into the chassis, swing the right edge toward the chassis. Then maneuver the logic board up and down slightly until it drops into place, reversing the operation in step 9.

14. Reconnect Internal Cables

Stand the Mac upright and reconnect the power/video cable and internal disk drive cables that you disconnected in step

Memory Rules

Macintosh Plus Memory Configurations

System Memory Size: 512 K Bytes

SIMMs Configuration

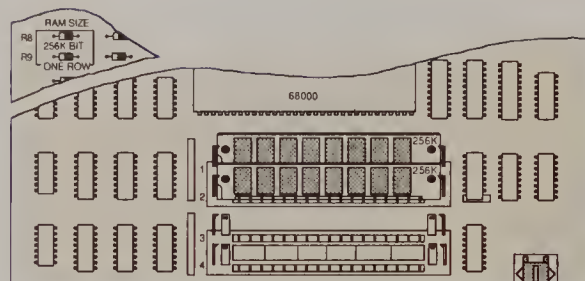
Row 1 (SIMMs 1 & 2): 256 KB

Row 2 (SIMMs 3 & 4): Not Installed

RAM SIZE Resistors

256K BIT (R8): 150 Ohms

ONE ROW (R9): 150 Ohms



System Memory Size: 1 M Bytes

SIMMs Configuration

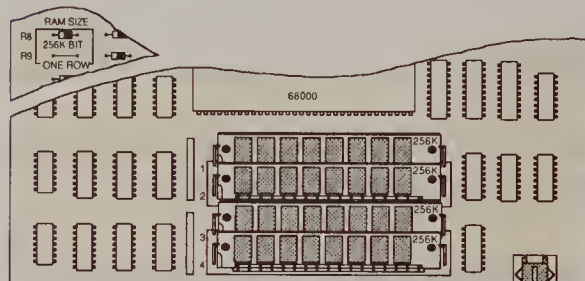
Row 1 (SIMMs 1 & 2): 256 KB

Row 2 (SIMMs 3 & 4): 256 KB

RAM SIZE Resistors

256K BIT (R8): 150 Ohms

ONE ROW (R9): Not Installed



System Memory Size: 2 M Bytes

SIMMs Configuration

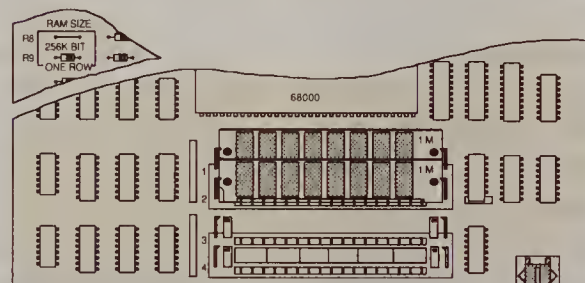
Row 1 (SIMMs 1 & 2): 1 MB

Row 2 (SIMMs 3 & 4): Not Installed

RAM SIZE Resistors

256K BIT (R8): Not Installed

ONE ROW (R9): 150 Ohms



System Memory Size: 2.5 M Bytes

SIMMs Configuration

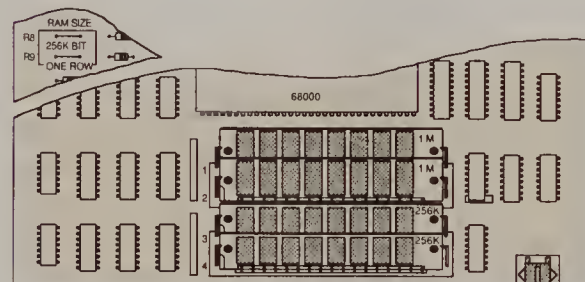
Row 1 (SIMMs 1 & 2): 1 MB

Row 2 (SIMMs 3 & 4): 256 KB

RAM SIZE Resistors

256K BIT (R8): Not Installed

ONE ROW (R9): Not Installed



System Memory Size: 4 M Bytes

SIMMs Configuration

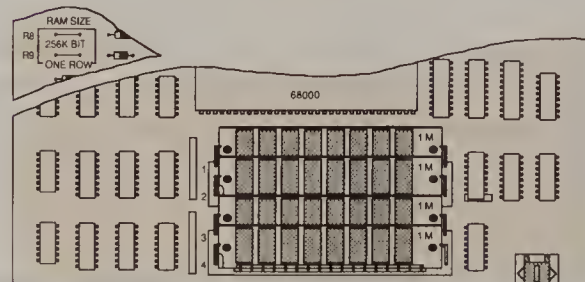
Row 1 (SIMMs 1 & 2): 1 MB

Row 2 (SIMMs 3 & 4): 1 MB

RAM SIZE Resistors

256K BIT (R8): Not Installed

ONE ROW (R9): Not Installed



Macintosh SE Memory Configurations

System Memory Size: 512 K Bytes

SIMMs Configuration

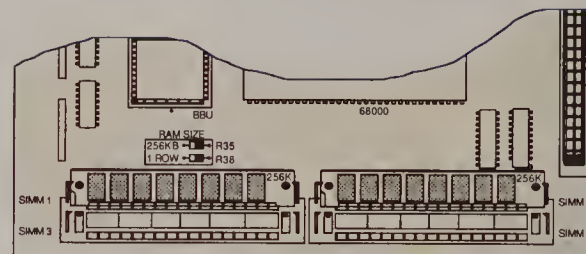
Row 1 (SIMMs 1 & 2): 256 KB

Row 2 (SIMMs 3 & 4): Not Installed

RAM SIZE Resistors

256K BIT (R35): 150 Ohms

ONE ROW (R36): 150 Ohms



System Memory Size: 1 M Bytes

SIMMs Configuration

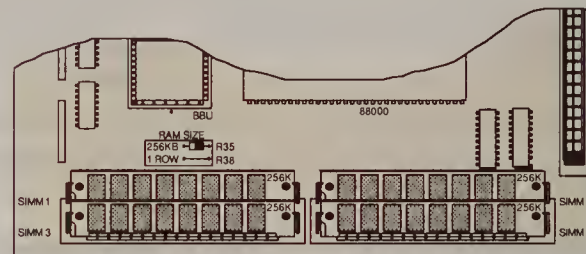
Row 1 (SIMMs 1 & 2): 256 KB

Row 2 (SIMMs 3 & 4): 256 KB

RAM SIZE Resistors

256K BIT (R35): 150 Ohms

ONE ROW (R36): Not Installed



System Memory Size: 2 M Bytes

SIMMs Configuration

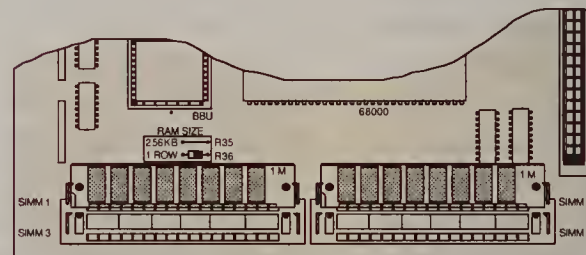
Row 1 (SIMMs 1 & 2): 1 MB

Row 2 (SIMMs 3 & 4): Not Installed

RAM SIZE Resistors

256K BIT (R35): Not Installed

ONE ROW (R36): 150 Ohms



System Memory Size: 2.5 M Bytes

SIMMs Configuration

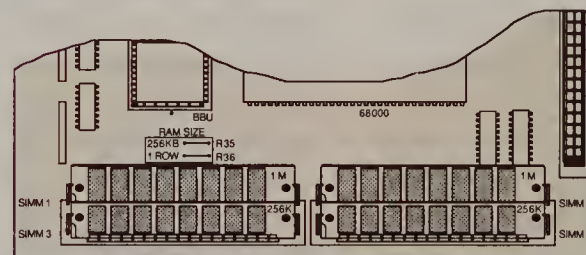
Row 1 (SIMMs 1 & 2): 1 MB

Row 2 (SIMMs 3 & 4): 256 KB

RAM SIZE Resistors

256K BIT (R35): Not Installed

ONE ROW (R36): Not Installed



System Memory Size: 4 M Bytes

SIMMs Configuration

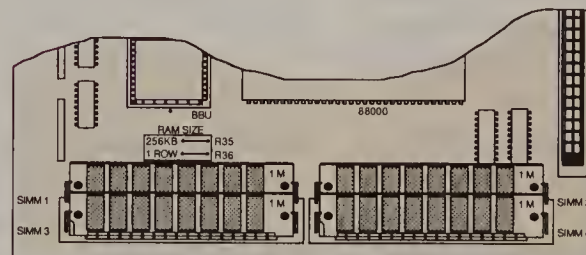
Row 1 (SIMMs 1 & 2): 1 MB

Row 2 (SIMMs 3 & 4): 1 MB

RAM SIZE Resistors

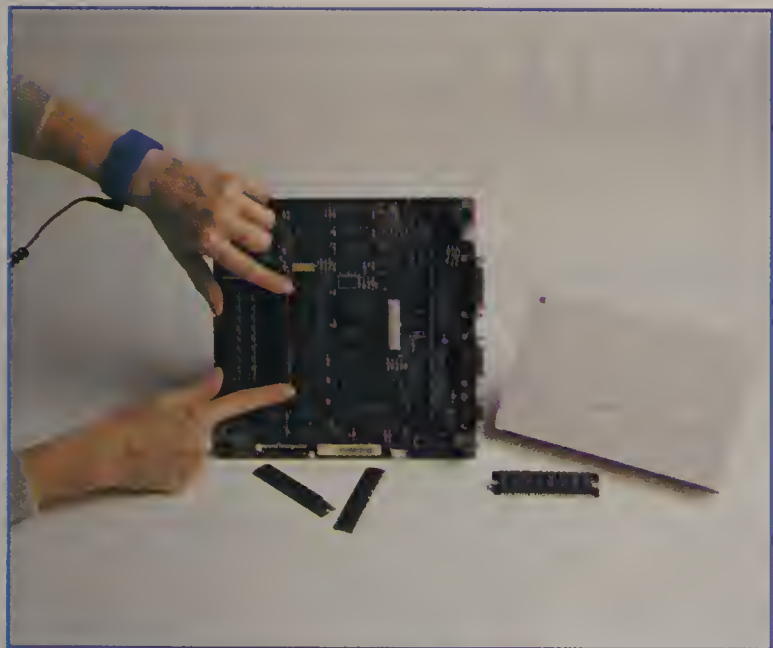
256K BIT (R35): Not Installed

ONE ROW (R36): Not Installed



Memory Rules

SIMMs can be installed only in these configurations. Printed with permission from Apple Computer.



Step 11.

Install the replacement memory, using the proper configuration (see "Memory Rules").



Step 12.

Adjust the RAM SIZE resistors by clipping one lead and pivoting the resistor aside.

8. If there are other internal accessories such as a large screen, reconnect those cables also.

15. Install Fan (Optional)

Some memory upgrades come with a cooling fan. If the fan mounts inside the Mac, follow the manufacturer's instructions now for installing the fan. You don't need to add a fan after upgrading with regular SIMMs.

16. Adjust Power Supply

If you've installed SIMMs, you don't have to complete step 16. However, additional memory may draw more electrical current with a long piggyback module or an adapter card. On a Mac Plus, this lowers the output voltage of the power supply. You can adjust the voltage level with a small plastic screwdriver while the case is open. The Mac SE power supply adjusts itself.

To adjust the Mac Plus power-supply voltage, ground one probe of a DC voltmeter by inserting it into the serial port screw hole. Use the voltmeter to find which of the eight leads has closest to 5 volts on it. Insert the other probe into the 5-volt lead on the power/video cable connector. After you've attached the voltmeter, both

your hands should be free to make adjustments.

Plug in the Mac and switch it on. **CAUTION:** While the power is on, avoid touching any circuitry or components to protect against receiving an electric shock while the case is open. Then adjust the voltage for +5 to +4.98 volts DC. The adjustment control is located near the top-rear corner of the power-supply board. Avoid setting the voltage above +5 or the power supply may start to cycle itself off and on as a protection against overvoltage.

17. Reinstall RF Shield

Before going any further, turn off the power and unplug the Mac's power cord to avoid unnecessary exposure to electric shock. Place the Mac on its face again and hang the RF shield over the ports, so that it covers the soldered side of the logic board.

18. Close Case

With the Mac on its face, slip the case back on. If the case catches, just work with it patiently. You may have to use a flat-blade screwdriver to widen the groove inside the cover where the analog board fits. Squeeze the case together evenly.

19. Install Screws

A Mac Plus has five screws, a Mac SE, four. The two black screws go nearest the ports at the bottom of the Mac.

20. Reinstall Programmer's Switch

The programmer's switch is optional. It fits in the cooling vents at the bottom of the Mac, near the back on the left side.

21. Reset Control Panel and Chooser

Removing the logic board on a Mac Plus disconnects the clock battery. After you put the Mac Plus back together, most Control Panel options revert to standard settings. For example, the clock and calendar are set to midnight, January 1, 1904. The Chooser is affected also. Be sure to adjust the Control Panel and Chooser to your preferences. You shouldn't need to reset the Control Panel and Chooser on a Mac SE, because its battery is on the logic board and isn't disconnected during a memory upgrade. □

The author would like to thank John Sawyer of CJS Systems and Wally Clegg of PCW Communications for their valuable technical assistance in preparing this article.

See *Where to Buy* for contact information.

Users Friendly



Shopping for software at the Seattle Macintosh Downtown Business Users Group.

RICH FRISIMAN

Berkeley Macintosh User Group, Thursday night meeting.

Question from the audience: I have a Mac Plus. How should I upgrade its memory? I want to run HyperCard and Multifinder.

Discussion leader: The cheapest way is to get four Toshiba surface-mount one-megabit SIMMs that are 120 nanoseconds or faster and install them yourself. If they're surface mounted, you can do it.

Voice from the audience: Whaddaya mean? One-twenty-nanosecond chips are the fastest—

Leader: No, 80-nanosecond SIMMS are becoming available.

Original inquirer: Won't that void my warranty?

Leader: Then install an Apple upgrade. But it's much more expensive.

Voice from the audience: If something goes wrong, just pull the SIMMs out and they'll never know.

Another voice: Yes they will! You have to clip a resistor when you install the SIMMs.

First voice: It's the same resistor they clip for an Apple upgrade. Anyway, we can do a pretty good job of resoldering it. (Laughter.)

Leader: (to original inquirer) Do you have a hard disk?

Inquirer: No.

Leader: Buy that first. In order of importance, get a hard disk, a large screen, more RAM, and an accelerator card.

In the back, two guys argue about whether to get the RAM before the screen. They sound like the beer commercial: "Less filling!" "Tastes great!"

Welcome to the user group, a last bastion of the Mac spirit in computing and one of the best sources of computer help around.

Know-how and enthusiasm make user groups a best bet for Mac support

by Michael Alexander

Stereotypically, computer user groups figure as a kind of second cousin to "Star Trek" fan clubs. Instead of trekkies, they're populated by techies (mostly male), who prefer COBOL to English and like to spend their Saturday nights debugging public-domain utilities. Not so long ago, Apple co-founder Steve Jobs predicted that the advent of friendly computers like the Macintosh signaled the beginning of the end for computer clubs; no longer needed, they would wither and die.

In fact, Mac user groups are growing rapidly as users turn to them in increasing numbers to fill the gaps in the Mac support network left by dealers and developers. There are now about 800 Mac user groups (MUGs) in the United States, up 20 percent over a year ago. And the character of the groups is changing to reflect the changing profile of Macintosh users. Alongside the traditional, general-interest, geographic-based groups, special-interest groups are springing up in increasing numbers to cater to the needs of professionals and others who share common problems. Business and corporate groups have increased 71 percent in the last year; groups oriented around specific professions or subject areas are up 30 percent; and government Mac user groups have increased in number from 1 to 10.

The reasons for the growing interest in user groups are no mystery. As Leon Ablon, president of the New York MUG, says, "We offer services that dealers and manufacturers cannot possibly supply, because it's uneconomical." At meetings members get product previews, hear the latest gossip, and enjoy the fellowship of people who can appreciate their Mac problems and achievements. Special-interest groups (SIGs) bring together spreadsheet artists, HyperCard authors, graphics aficionados, programmers, musicians, doctors. There are groups for Mac novices and people with disabilities. Those who don't attend meetings keep informed with newsletters; techies talk on bulletin boards; the desperate and confused seek answers over telephone help lines; the adventurous explore public domain software from the disk libraries; and the

budget-conscious take advantage of discounts at local computer stores. All of this typically costs \$15 to \$40 a year.

A recent *Macworld* survey revealed that Mac owners find user groups a better source of information than dealers, ads, or business contacts. The groups often have information on new products or software problems months before consumer magazines are able to print it. At their best, groups provide contact with knowledgeable, friendly, live humans who can help you with your Mac problems and who aren't trying to sell you anything.

Groups give individual users a chance to meet and influence industry leaders. Here Microsoft chairman Bill Gates addresses the Boston Computer Society.



Michael Alexander says that BMUG's advice has saved his life on two occasions. He is editor and publisher of Stacks, the HyperCard design newsletter.

Getting the News

Almost every MUG prints a newsletter, but some of them do such a fine job that it's worth joining up to receive the publication even if you'll never be in the neighborhood for a meeting. Here's a list of some of the finest.

■ *The BMUG Newsletter* exceeded 300 pages with the latest issue. Twice a year it prints articles on hardware, software, and programming, along with the usual opinionated product picks that endear Team BMUG

to the newsletter's loyal readers. BMUG, 1442A Walnut St., #62, Berkeley, CA 94709, 415/849-9114. Membership \$40/year. Back issues \$15.

■ *The Active Window*, published monthly, stands out for its original material and its reliability. Boston Computer Society Mac User Group, 48 Grove St., Somerville, MA 02144, 617/625-7080. Membership \$35/year; associate membership (outside New England) \$28/year.

■ *Mouse Droppings*, a monthly newsletter, boasts intriguing gossip, good technical hints, and timely bug reports. MUG of Corvallis, 1695 N.W. Division St., #3, Corvallis, OR 97330, 503/563-2501. Membership \$22/year.

■ *The Mac Street Journal*, from NYMUG, seems to get bigger each month. New York Mac Users Group, P.O. Box 2269, New York, NY 10116, 212/691-0496. Membership \$25/year.
—Nancy E. Dunn

That Old-Time Spirit

In addition to offering services most of us couldn't afford if we had to pay for them, user groups provide something difficult to find these days at any price: genuine enthusiasm. Without this spirit, the groups—many of which are highly organized and most of which carry on without paid staff—couldn't exist at all.

What motivates group members to donate so much time and energy? Besides a desire to socialize or to show off Mac knowledge, the answer seems to be true love. Leon Ablon, the NYMUG president, is typical. Asked why he does it, this consultant and professor of mathematics at City University of New York answers, "I get a lot of gratification. I love to see people involved with this machine. I've hung around mainframes all my life, but I would never join an IBM mainframe group. Yet when I bought my Mac, I immediately looked for a user group, and people with whom to talk. I guess I talked more than the others, so I became president. It is an emotional experience."

Rank-and-file group members benefit from experienced members' desire to share. A percentage of the new members, in turn, discover themselves drawn to the satisfactions of volunteering.

Because most clubs operate on a volunteer basis, for the most part without the encumbrance of a profit motive, they're able to take a refreshingly irreverent view toward the Mac industry. In their newsletters, bulletin boards, and meetings, clubs stand up for the individual user, sometimes leaving the industry's prime movers somewhat shaken.

The Berkeley Macintosh Users Group, for example, has such an aversion to sales hype that it warns developers not to send marketing people to meetings and to avoid any talk of why someone might want to own a product; instead, developers are urged to send technical staff and to simply demonstrate what a product can do. A passionate group, BMUG audiences are reminiscent of the legendary opera fans of Italy, gleefully heaving tomatoes at any hapless singer whose warbles are less than perfect.

WordPerfect Corporation found this out the hard way when it demonstrated a prerelease version of its new Mac word processor. BMUG's 21-year-old co-founder Raines Cohen sums up what happened: "They came. They showed. They crashed." Numerous times. It didn't help that WordPerfect's marketing reps seemed not to know their product as well as did some members of the audience, who had been beta-testing it for weeks. WordPerfect wasn't unique. "Happened to Microsoft, too," Cohen says.

BMUG isn't the only tough bunch. When Jean-Louis Gassée, Apple's head of research and development, spoke to the New York MUG last year about Apple's new machines and the future of computing, some questioners used him as a convenient target for complaints about what they saw as Apple's deficiencies in user support. The exchange grew as hot as the analog board of a Mac 512, but perhaps it had an effect. Re-

cently Apple has been making noises about improving its help to users.

Local Groups

Although business and specialized groups are all the rage, local general-interest groups are still the most common type of MUG. A cross-country tour could take you from Applesauce in East Longmeadow, Massachusetts, to the Short Hills Apple Pits in New Jersey, through Lincoln, Nebraska, home of the Mackey Mouse Club, and on to Winston, Oregon, where you could attend a meeting of the Apple Blossom club.

Meetings everywhere take roughly the form that *Macworld* columnist Steven Levy says was established at Silicon Valley's original Homebrew Computer Club, where Apple was born. Typically, a question-and-answer period is followed by one or more demonstrations, and then informal conversations or special-interest gatherings. Tables in the room display public domain and shareware disks for sale, along with product literature and copies of the group's newsletter. If the group is large, special-interest meetings may be held on different nights. There is always a separate group or some other form of special attention for beginners.

National Groups

Some groups have grown so large or offer such outstanding services that they have attracted national interest. Though its roots are deep within the University of California, BMUG today—with over 3000 paid members—is a national user group. BMUG is so active that its main meetings are weekly, surpassing even other major groups, which meet in full session only once a month.

Many members, particularly the thousand who don't live in the San Francisco Bay Area, pay \$20 a semester just to get the famous semiannual "newsletter" (the current edition is over 300 pages—see "Getting the News"). Nonlocal members can also call the particularly knowledgeable help-line staff. The bulletin board has four lines, and is often first with new software and information.

The Boston Computer Society boasts the biggest national Macintosh user group. At 8000 members, it's so large that it has seven regional units throughout New Hampshire, Rhode Island, and Massachusetts. "We're the granddaddy of computer groups," says Rebecca Waring, executive director of BSC and editor of its respected 60-page monthly newsletter *The Active Window*.

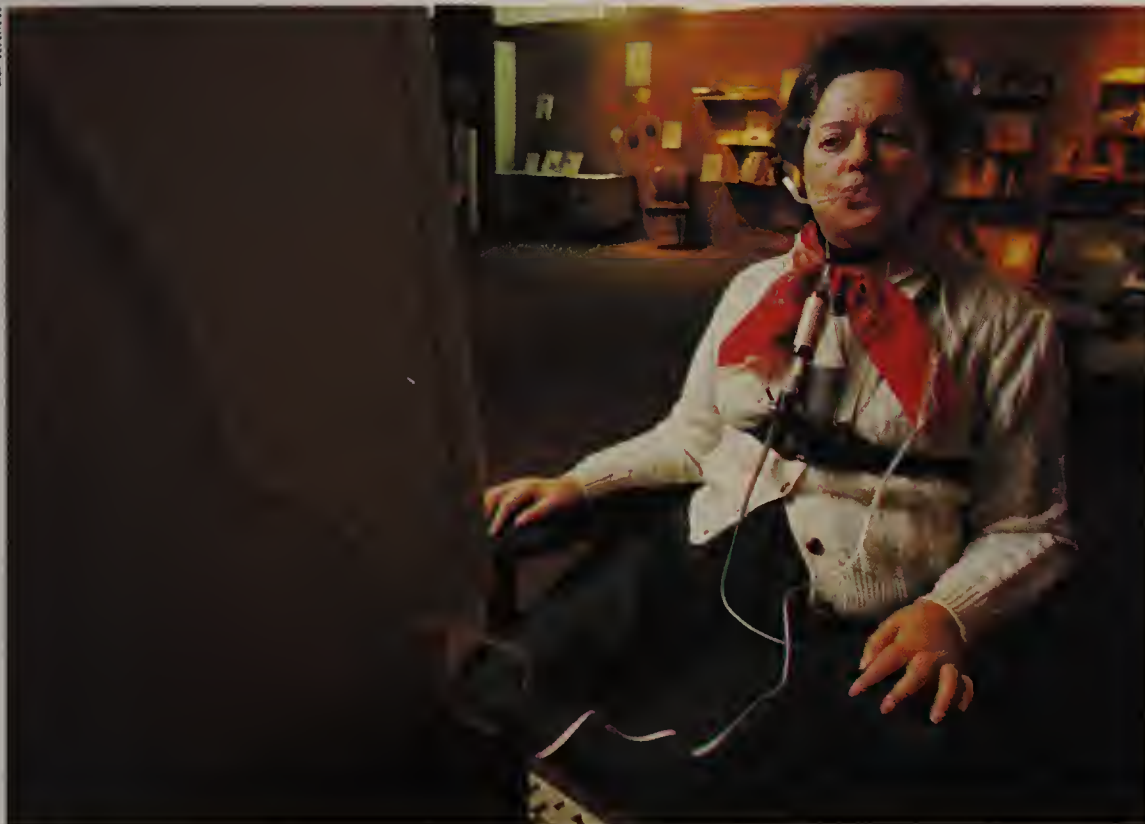
BCS has over 40 special-interest groups. The Mac section has high-powered medical, legal, design, technical, and engineering groups, and even the SIGs attract major speakers. Some SIGs are Mac only, but others, like desktop publishing, are subject- instead of machine-based.

BCS Mac conducts training seminars in its own office at least three nights a week. Subjects range from introduction to the Mac to the intricacies of Quark XPress or Excel. The instructors are professionals, the cost is \$25, and many companies send employees to learn new programs or new machines.

BCS costs \$28 a year for members outside New England. There are members in all 50 states—including 1000 in California—and in 40 countries. You get subscriptions to two newsletters of your choice (even the special-interest groups have newsletters), a bimonthly color magazine, and a buying guide listing stores and companies that give at least a 10 percent discount to BCS members. New England members pay \$35 and receive a calendar that lists more than 200 meetings a month.

Specialized Groups

Where the Mac goes, Mac user groups are bound to follow, and today the Mac is going into large corporations. According to Lockheed Employees' Apple User Group ambassador Mike Bailey, LEAUG was actually instrumental in helping the aerospace giant get over its Big Blue bias. "We convinced many people with Macs to take them to work. We put Macs on the desks of people who we thought would change their minds if they could use one. We got Apple to donate computers for a short period, and to put on special demonstrations."



Disabled Children's Computer Group member Diana Lauterbach tries out a Personics HeadMaster at the club's resource and training center. The apparatus enables people who can't use a mouse or keyboard to point to on-screen letters using a "puff and sip" mechanism.

Disk Collectors

Some user groups specialize in training seminars, some in BBS hyperactivity, and some in tracking down every new public domain or shareware utility. The MUGs listed here are renowned for their disk collections, and yes, they do mail order. Most disks cost less than \$10.

Apple Corps of Dallas shares a 400MB collection with the Mac Pack. It offers up to 30 new disks each month of screened and tested software and stacks, each one with a Read Me file describing its software offerings. *P. O. Box 835537, Richardson, TX 75083, 214/357-9185. Membership \$20/year.*

BMUG's latest newsletter has 26 pages of disk index—and that's just the titles and disk reference. *1442A Walnut St., #62, Berkeley, CA 94709, 415/849-9114. Membership \$40/year.*

Boston Computer Society Mac User Group publishes a directory for its collection. *48 Grove St., Somerville, MA 02144, 617/625-7080. Membership \$25/year.*

Macadamia maintains a 130-disk collection, sorted into about 40 categories and cataloged in a HyperCard stack. Disk of the month available for \$1 plus an empty disk and postage. *P. O. Box 333, Crystal*

Lake, IL 60014. Membership \$15/year.

MacTechnics takes an almost obsessive approach to collecting public domain software and shareware; the result: 250 disks grouped in 70 categories. *P. O. Box 4063, Ann Arbor, MI 48106. Membership \$25/year.*

Northern Illinois Computer Society offers fifty 800K disks of software in 15 categories, plus another thirty 800K disks of HyperCard stacks. *P. O. Box 547, Arlington Heights, IL 60006. Membership \$30 first year, \$24/year thereafter.*
—Nancy E. Dunn

Specialists

The following clubs all specialize in a single subject area and have a national membership. Let *Macworld* know if you have a professional or other special-interest group not listed here.

■ **Boston Computer Society Medi-Mac Group**, 48 Grove St., Somerville, MA 02144, 617/625-7080.

■ **San Diego Medical Apple Users**, 3444 Kearny Villa Rd., #303, San Diego, CA 92123.

■ **Computer Hebrew User Group**, 21 Bennet Ave., #46, New York, NY 10033, 212/923-4825.

■ **CPA Computer Users Group**, P.O. Box 56, Narberth, PA 19072.

■ **SigMAChem**, Chemistry and Biochemistry Dept., Texas Tech University, Lubbock, TX 79409, 806/742-3057.

■ **Mac Engineering User Group**, 8710 W. 68th Pl., Arvada, CO 80004.

■ **Aviation & Computer Enthusiasts**, 2009 Camelot Dr., Las Cruces, NM 88005.

■ **Mac Buddhist LA**, 2605 North Beachwood Dr., Los Angeles, CA 90068, 213/464-3599.

■ **Realtors Mac User Group**, 18023 Sky Park Circle, F-2,

Irvine, CA 92714, 714/261-1930.

■ **The Disabled Children's Computer Group**, 2095 Rose St., Berkeley, CA 94709.

■ **MEGA (Macintosh Entertainment Guild of America)**, 1032 N. Sycamore Ave., Hollywood, CA 90038. Call Peggy MacAffee, 213/653-0240.

■ **American Bar Association Macintosh Users Group**, 750 N. Lake Shore Drive, Chicago, IL 60611, 312/988-5598.

■ **MacForth Users Group**, Box 3081, Westville Station, New Haven, CT 06515.

—Nancy E. Dunn



Club help lines are always a popular resource. If Berkeley Macintosh User Group hotline helpers Raines Cohen, Randy Simon, and Steve Costa (front to back) can't answer your question themselves, they can usually refer you to someone who can.

Bailey says that today Lockheed's Macintosh group benefits the company by offering employees computer solutions and training. Some courses are taught by volunteers, but major publishers also send their experts. The Lockheed group's 500 employee members benefit from discounts on hardware and software.

Introducing the Mac to another large organization, the federal government, has been slow going. But Steve Broughall, president of the expanding 200-member Pentagon MUG, says that "numerous other agencies have asked us about forming groups." As with corporate groups, he says, the emphasis is on "workplace solutions. We coexist with regional groups, because we don't offer such wide-ranging services."

Besides organization-specific groups, other specialized groups bring together people of common professional or other interests. Daniel Kegan chairs the American Bar Association's Macintosh User Group from Chicago. ABA Mac's national membership has no meetings except get-togethers at national ABA conventions, so most of the communication is through a quarterly newsletter or over the E-mail or conferencing facilities of the ABA's electronic network.

In Berkeley, Jacquelyn Brand and a group of parents of children with disabilities formed a computer club that has become a model for 14 others across the country. The Disabled Children's Computer Group is a resource center that gives members access to adaptive devices that enable people with disabilities to use

computers. Apple has provided equipment and set up a National Special Education Alliance to help DCCG share information with similar groups. DCCG is the first user group of its kind and is run mostly by volunteers. It serves 2700 kids and adults, families and teachers a year.

Skill level determines yet another type of Mac user group. In New York City, Stuart Gitlow, a medical student and early member of NYMUG, became frustrated with what he perceived as a bias at NYMUG toward beginners. So last April, Gitlow and two others founded the LaserBoard Mac Users Group, which exists mostly as a bulletin board. According to Gitlow, it attracts "programmers, developers, advanced business users, power users, and other people who use the Mac every day." If not every instant.

Supergroups

Last year, Apple finally recognized the value of user organizations and assigned new coordinators to work with the growing higher education, business, and government groups. The groups themselves are forming supergroups. At January's Macworld Expo in San Francisco, corporate, government, and business groups began planning a National Apple Professional Information Exchange. It will sponsor technical papers, tell developers and Apple what hardware and software improvements corporations need, help more corporate groups get started, and perhaps set technical standards. The groups extol Apple's support but emphasize their independence.

All groups can link together through three different electronic networks. As a result, important Mac information—bug fixes, new products, new public domain software, or solutions to your Excel spreadsheet problem—can reach you anywhere in the world in one to four days.

Your Choice

If all that sounds like a good deal, visit your local user group. To find it, call Apple's User Group Directory, 800/538-9696, extension 500. If your neighborhood group doesn't meet your expectations, try one of the national or special-interest groups. The help you get can be invaluable, you may find the experience is great fun, and membership dues are trivial. Are there any disadvantages?

Ray Stubbs, the guy at the BMUG meeting who asked about memory upgrades, ponders the question. "A thorough discussion here can be quite complex," he says. "When I come, I learn a lot. Also, when I come I buy a lot, so I don't always want to come." □

Expanding the Conversation

An overview of AppleTalk network products

M *by David R. Kosiur*

any Mac owners installed AppleTalk simply to connect their Macs to a LaserWriter. But Apple designed AppleTalk with a complete set of protocols, or rules, for communicating on a network. These protocols let you do more than send print instructions to a shared LaserWriter. You can also exchange data, correspond through electronic mail, access other peripherals such as modems and plotters, run multiuser software, link up to mainframes, and send data at faster transmission rates across Ethernet.

The protocols that permit these network capabilities follow the criteria of the Open Systems Interconnect (OSI) seven-layer model, as proposed by the International Standards Organization (see "The Ethernet Solution," *Macworld*, January 1988). Apple designed each layer to communicate with the layer above and below in a specified manner. As a result, a developer can program new procedures into a layer's protocols so long as the data passed up or down the layers adheres to Apple's specifications. Apple's modular layer model has simplified the task of running AppleTalk over different network media, such as Apple's LocalTalk and EtherTalk, Farallon's PhoneNet, and DuPont's fiber-optic cable. The ability to use these diverse cabling schemes and protocols has produced, in turn, a very dynamic network.

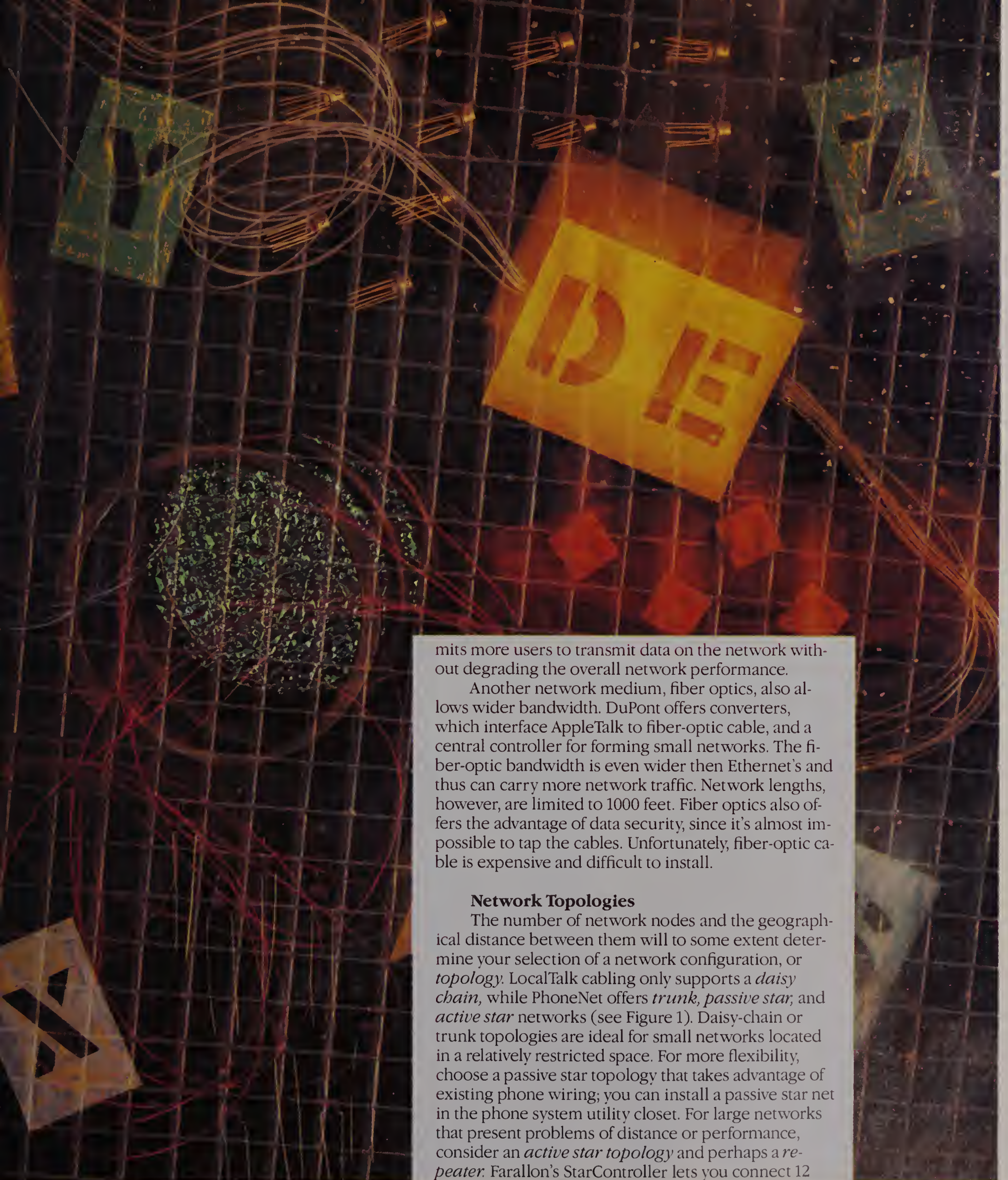
David R. Kosiur is the publisher and chief editor of Connections, a newsletter about Macintosh networks.

Making the Connection

Work groups can set up a relatively inexpensive AppleTalk network. Apple's LocalTalk uses a connection box for each device and shielded twisted-pair cable to link computers and peripherals. The connection box maintains network continuity even when you disconnect a Mac from the box.

Farallon Computing offers an alternative wiring scheme for AppleTalk networks. Farallon's PhoneNet uses unshielded twisted-pair cable, or phone wire, to link the devices on a network. The connection box, while similar to Apple's, uses standard phone jacks and requires a terminating resistor at the ends of the network (Apple builds a terminating resistor into the connection box). The PhoneNet system offers various advantages over LocalTalk. The phone jack connects better than Apple's former friction-fit connector. PhoneNet can use the same cables as your phone system, and it supports network distances of 3000 feet compared to LocalTalk's 1000 feet. In fact, Farallon's PhoneNet has become so popular, especially among corporate users, that other manufacturers now offer PhoneNet-compatible connectors.

As your network grows, you may find LocalTalk's 230,000 bits per second (bps) too slow. To improve data transmission rates, install an Ethernet network and run Apple's EtherTalk. EtherTalk interfaces AppleTalk protocols with Ethernet to let Mac programs take advantage of Ethernet's higher data transmission speeds and wider bandwidth. Wider bandwidth per-



mits more users to transmit data on the network without degrading the overall network performance.

Another network medium, fiber optics, also allows wider bandwidth. DuPont offers converters, which interface AppleTalk to fiber-optic cable, and a central controller for forming small networks. The fiber-optic bandwidth is even wider than Ethernet's and thus can carry more network traffic. Network lengths, however, are limited to 1000 feet. Fiber optics also offers the advantage of data security, since it's almost impossible to tap the cables. Unfortunately, fiber-optic cable is expensive and difficult to install.

Network Topologies

The number of network nodes and the geographical distance between them will to some extent determine your selection of a network configuration, or *topology*. LocalTalk cabling only supports a *daisy chain*, while PhoneNet offers *trunk*, *passive star*, and *active star* networks (see Figure 1). Daisy-chain or trunk topologies are ideal for small networks located in a relatively restricted space. For more flexibility, choose a passive star topology that takes advantage of existing phone wiring; you can install a passive star net in the phone system utility closet. For large networks that present problems of distance or performance, consider an *active star topology* and perhaps a *repeater*. Farallon's StarController lets you connect 12 branches to the controller; each branch supports 3000 feet of wiring, to create one 36,000-foot network. If

you need to link only one or two nodes located on "the north forty" to the rest of the network, invest in a repeater, a device that amplifies the signals that run on AppleTalk or PhoneNet cables. Repeaters usually allow you to increase the distance between nodes by a factor of two or three, but you can often chain repeaters together for even greater distances.

Servers

After you've selected a network topology, identify the kinds of tasks you expect the network to perform and choose an appropriate *server*. These network devices literally offer services to each user and allow multiple workstations to use a peripheral device. *Disk* and *file servers* support access to information on a disk (or disks); *print servers* or *spoolers* handle print jobs, most commonly for LaserWriters; *modem servers* allow clients to share a modem; and *device servers* let users connect to, and share, non-AppleTalk devices, such as daisy wheel printers or plotters.

File Servers

Both disk and file servers let you share disk space. The more restrictive disk servers (MacServe or SUN*MUFS) offer segregated file storage and do not give multiple users simultaneous access to the same disk partitions. File servers, such as AppleShare, 3+, and TOPS, allow more than one user to access the same file in the same volume; they also manage access conflicts between users with file, record, and byte-locking features.

You have a choice of two types of file servers: centralized, or dedicated, servers; and distributed servers.

Centralized servers, such as AppleShare and 3+, require their own hardware. AppleShare uses a dedicated Mac and a hard disk, and allows you to run only one other application concurrently (usually laser spooling, modem service, or electronic mail). The 3+ system provides a server box that contains a microprocessor and a hard disk. The system not only handles file requests, but also spools print jobs for a LaserWriter, and maintains an E-mail system for the network.

Probably the best-known example of a distributed server is TOPS. With TOPS each network node can function as a server. This means you *publish* files—you make them available to other users—on your own hard disk. The success of TOPS depends on cooperation among the members of your network. If your Mac crashes or you forget to publish some files for a joint project, then other users won't have access to the data.

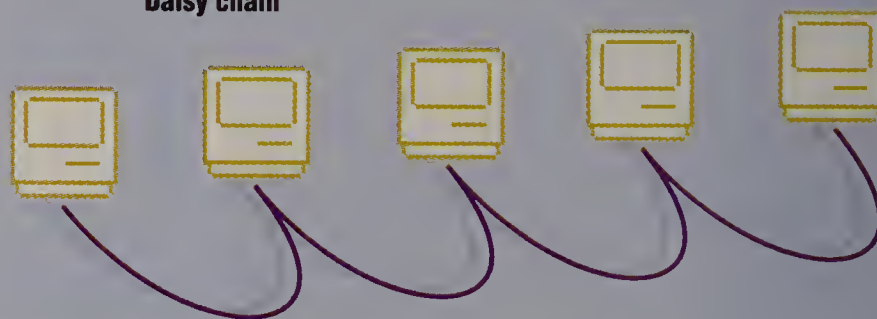
Print Servers

Network print servers help avoid the frustrating delays built into PostScript-based printers. You can take one of two approaches to print spoolers (see "Speaking of Spoolers," *Macworld*, June 1987). The most common is to install a localized print spooler, which uses part of the RAM and the hard disk of your Macintosh to store the print file. The spooler takes over the job of communicating with the LaserWriter while you proceed to another task. The second approach involves installing a centralized print spooler, or buffer, which accepts and stores the printing information. The buffer then tells your Mac that it has finished the print job, which leaves you free to continue working while

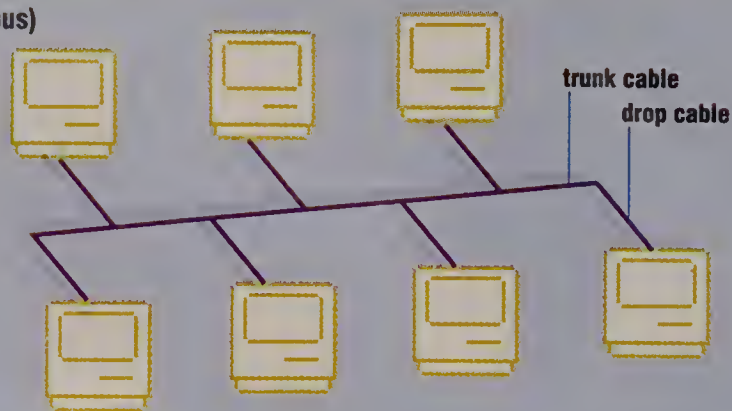
Figure 1

The three fundamental network topologies are the daisy chain, trunk (or bus), and star. Apple's LocalTalk only supports the daisy-chain topology, while Farallon's PhoneNet supports all three topologies. You can configure a star topology as active or passive. Active stars use a controller, such as DuPont's fiber-optic Concentrator, or a special isolator/repeater, such as Farallon's StarController, in the hub of the star. (For a passive star the box at the hub would simply have all five branches connected together.)

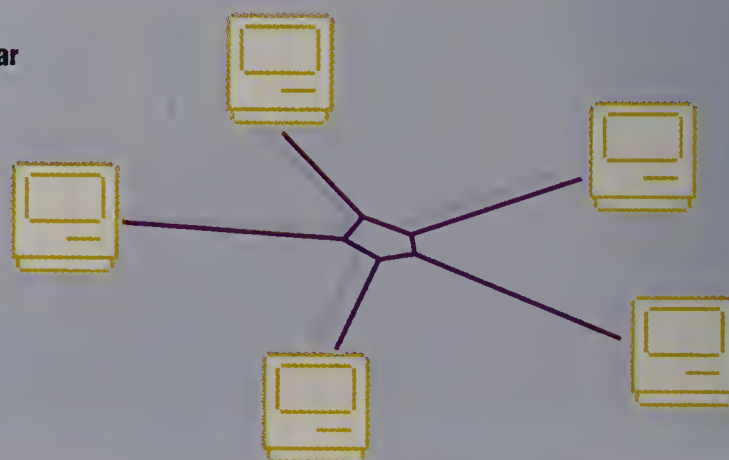
Daisy chain



Trunk (or bus)



Star



the buffer interacts with the LaserWriter. Most buffers hold more than one printing job in a queue.

Centralized spoolers offer network users more advantages than localized spoolers. With localized spoolers, you regain control of your Mac more quickly, but you still compete with the other users on the network to get your job to the LaserWriter. If you have a high-priority job you'll have to ask all other LaserWriter users to abort their printing jobs. A centralized spooler (like LaserShare, 3+, or LaserServer) stores everyone's jobs in one location (the buffer) and lets you reprioritize the queue from your Mac, without dumping any jobs. Also, as networks get larger, you may find it cost-effective to purchase one centralized buffer rather than enough copies of a localized spooler.

Modem Servers

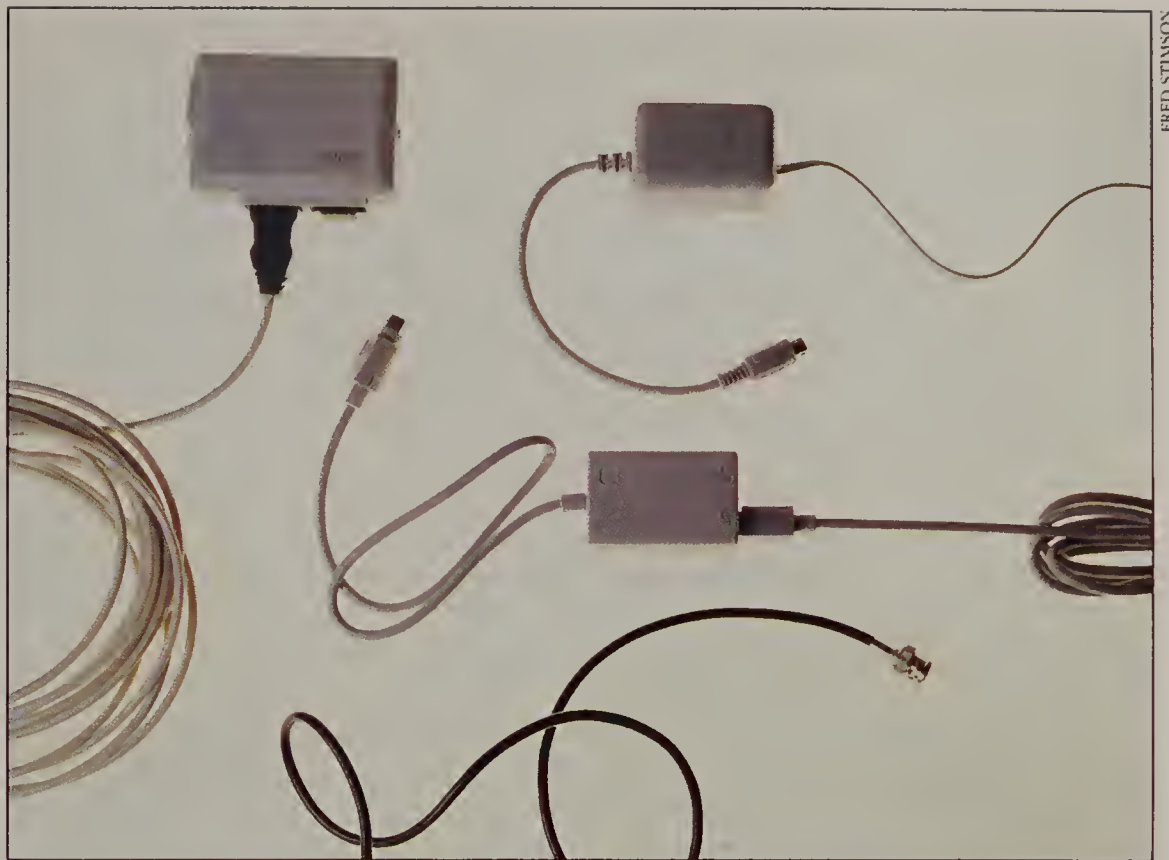
As the name implies, modem servers offer network users access to a modem. With only one modem per network, heavy modem usage may force network users to wait for access to complete their calls. One hardware-based modem server, Shiva's NetModem, provides AppleTalk access for remote users. Thus you can call your office network from the field and transmit data to your file server, or print on the office's LaserWriter. You should be aware, however, that modems operate significantly slower than LocalTalk (the NetModem operates at 1200 bps, compared to LocalTalk's 230,000 bps). Many tasks will take longer and some programs may not work at all, because of delays between transmission and system response.

Device Servers

Not every computer peripheral works with AppleTalk. You cannot directly connect some useful devices like daisy wheel printers, pen plotters, or even non-PostScript laser printers (like HP's LaserJet) to an AppleTalk network unless you use a device server. The server box is designed to connect AppleTalk on one side and a non-AppleTalk device on the other side using either serial or parallel interfaces (two servers, C-Server and MultiTalk, can each connect to more than one device). Once you've installed a device server, each networked user can access the plotter or other device as if it were directly attached to the Mac.

Building a Bridge

Heavy network traffic on larger networks can significantly degrade the system's response time. In fact, you might think you were back working on a 128K Mac. At other times it's not the number of users on the network that affects performance but the type of application being used, for example a multiuser database package. To accommodate heavy traffic, you can convert to an Ethernet-based network, or you can divide your network into smaller networks (or zones) that link together with *bridges*. Bridges are intelligent devices that connect to physical networks. A bridge re-



An AppleTalk network can be assembled using a variety of cable types: (clockwise from top left) Dupont fiber-optic cable and converter, PhoneNet adapter and twisted-pair phone wire, standard LocalTalk adapter and cable, and thin Ethernet.

stricts the flow of data between networks and prevents local data from being passed to another network.

Three products—InterBridge, I-Server, and NetBridge—let you link dissimilar media and connect two LocalTalk or PhoneNet networks in a *local bridge* configuration. You can also create *half-bridge* configurations that join a LocalTalk or PhoneNet network to Ethernet or communicate to a remote site. The Fast-Path boxes from Kinetics provide half-bridges to Ethernet. The Ethernet cable functions simply as a transmission medium to link two LocalTalk networks, each with its own FastPath. To send data to a branch network at a remote site, connect a bridge device to a modem and then communicate to another modem/bridge combination on the other end (see Figure 2).

Foreign Systems

Part of the peaceful coexistence between Macs and IBM PCs results from a large selection of hardware that allows you to transfer data from Macs to PCs (see "The Road to MS-DOS," *Macworld*, August 1987). A number of vendors (Apple, Hercules, Tandy, Tangent Technologies, TOPS) now offer cards that provide MS-

Products for a Mac-Based Network

Network Hardware

AppleTalk Custom Wiring Kit/Apple Computer

Includes 100 m of cable, 26 assembly plugs, 4 cable extenders. \$650.

AST-ICP/AST Research

Communications card for Mac II. 2 AppleTalk ports \$949; 4 AppleTalk ports \$999.

TurboNet/Nuvotech

PhoneNet-compatible AppleTalk connector for Macs. \$49.95.

TurboNet Adapter/Nuvotech

Connects TurboNet/PhoneNet to AppleTalk cabling. \$6.

Concentrator/DuPont Electronics

Supports AppleTalk over fiber-optic cable; controller for linking Macs; 8 users. \$950.

Converter/DuPont Electronics

Supports AppleTalk over fiber-optic cable; adapter for Mac. \$250.

LocalTalk Locking Cable Kit—10 Meter/Apple Computer

Includes 10 m of AppleTalk cable. \$75.

LocalTalk Locking Connector Kit—DB9/Apple Computer

Attaches Mac 512K to AppleTalk running on Apple cabling system; includes 2 m of cable. \$75.

LocalTalk Locking Connector Kit/Apple Computer

Attaches Mac Plus—Mac II to AppleTalk—includes 2 m of cable. \$75.

Passive Star Wiring Kit—DIN8/Farallon Computing

Punch-down block to support up to 6 branches in a wiring closet. \$95.

PhoneNet Plus Connector/Farallon Computing

Connector for attaching Mac (or other device) to AppleTalk on phone wire. \$59.95.

PhoneNet to AppleTalk Adapter/Farallon Computing

Allows both LocalNet and PhoneNet connectors on same network. \$9.95.

Q-Talk/QMS, LaserConnection

Connector for attaching Mac (or other device) to AppleTalk on phone wire. \$49.

Ethernet

EtherPort II/Kinetics

NuBus card for Mac II; connects to Ethernet, supports EtherTalk and TCP/IP. \$795.

EtherPort SE/Kinetics

Interface card for Mac SE; thick- and thin-wire connections. \$795.

EtherSC/Kinetics

Interface box for Mac with SCSI port; thick- and thin-wire connections. \$1250.

FastNet/Dove Computer

Interface box for Mac with SCSI port; thick- and thin-wire connections. \$1498.

FastPath/Kinetics

Ethernet gateway for AppleTalk network; thick-wire connection; 31 users. \$2500.

FastPath 3/Kinetics

Ethernet gateway for AppleTalk network; thin-wire connection; 31 users. \$2750.

Macintosh II EtherTalk Interface Card/Apple Computer

Interface card for Mac II; thick- and thin-wire connections. \$699.

File Servers

3+ for the Mac/3Com

Requires 3Com server; interfaces to PCs using 3+. \$495.

3S/200/3Com

File server (106MB hard disk) plus processor; 2MB RAM; server software. \$7995.

3S/201/3Com

File server (see 3S/200 description); includes 60MB tape backup. \$9745.

AppleShare/Apple Computer

File server; requires dedicated Mac and hard disk; 50 users. \$799.

Giga Tower/NuData

File server; includes hard disk (300MB to 1.2 gigabytes) plus Mac II and color monitor. \$18,950—\$28,000.

MacServe/Infosphere

Disk server for any Mac and hard disk. \$250.

MARS2/Micro Dynamics

Document server and archival system; uses WORM drive. \$15,000.

TOPS/Macintosh/TOPS

Distributed file server; includes print spooler and format translator. \$189.

Print Spoolers

LaserServe/Infosphere

Background LaserWriter print spooler for individual Macs. \$95.

LaserServer/DataSpace

Centralized LaserWriter spooler. \$2295.

LaserShare/Apple Computer

Designed to complement AppleShare. \$299.

LaserSpeed/Symantec, Think Technologies Division

Local spooler for LaserWriter. 1 user \$99;

5 users \$495.

SuperLaserSpool/SuperMac Software

Local spooler for LaserWriter and ImageWriter. 1 user \$149.95;

5 users \$395.

TangentSpool/Tangent Technologies

LaserWriter spooler and PC AppleTalk card; 30 users. \$600.

Modem Servers

ComServe/Infosphere

Uses Mac to control access to shared modem. \$195.

ModemShare/Mirror Technologies

Uses Mac to control access to shared modem. \$200.

NetModem V1200/Shiva

Shareable modem with direct AppleTalk connection; supports remote access to AppleTalk network. \$599.

Device Servers

C-Server/Solana Electronics

3-port RS-232C server. \$645.

MacAccess/Inventab

1-port RS-232C server. Price TBA.

MultiTalk/Abaton

3-port RS-232C server. \$695.

NetSerial X232/Shiva

1-port RS-232C server. \$399.

R-Server/Solana Electronics

Asynchronous remote access to AppleTalk network. \$595.

Bridges

I-Server/Solana Electronics

Direct bridge. \$695.

InterBridge/Hayes Microcomputer Products

Direct bridge, or half-bridge with 2400-baud (or faster) modems. \$799.

NetBridge/Shiva

Direct bridge. \$399.

Repeaters

IPT NetRepeater/Information Presentation Technologies

Strengthens AppleTalk signals; permits longer distance between Macs. \$249.

PhoneNet Repeater/Farallon Computing

Increases maximum allowable distance between nodes. Price TBA.

PhoneNet StarController/Farallon Computing

Supports 12 electrically isolated branches in star topology. \$1695.

TOPS Repeater/TOPS

Strengthens AppleTalk signals; permits longer distance between workstations. \$189.

MS-DOS Connections

AppleShare PC/Apple Computer

Supports PC access to AppleShare file server; requires AppleTalk interface card. Price TBA.

AppleTalk PC Card/Apple Computer

AppleTalk interface card for PCs. \$399.

PC MacBridge ATB/Tangent Technologies

AppleTalk interface board for PC, includes printer driver. \$250.

PC MacBridge Plus/Tangent Technologies

PC MacBridge ATB, PSPrint, and MailBox; for PC. \$450.

PC MacServe/Tangent Technologies

Supports PC access to MacServe disk-sharing software. \$100.

Network Card Plus/Hercules Computer Technology

PC video card with AppleTalk support; based on RamFont card. \$395.

TandyLink/Tandy

AppleTalk interface card for Tandy PCs. \$120.

TangentShare/Tangent Technologies

Supports PC access to AppleShare file server; requires AppleTalk interface card. \$150.

TangentShare Bundle/Tangent Technologies

PC MacBridge ATB, TangentShare software, PC MacTxt. \$350.

TOPS Flashcard/TOPS

AppleTalk interface card for PCs; supports 770,000-baud AppleTalk between PCs. \$239.

TOPS NetPrint/TOPS

Enables IBM PCs to print directly to LaserWriters on AppleTalk; requires AppleTalk card for PC. \$189.

TOPS/DOS/TOPS

Distributed file server software for MS-DOS; requires AppleTalk card. \$189.

File Translators

Apple File Exchange/Apple Computer

Free.

CADMover/Kandu Software

\$495.

MacLink Plus/Dataviz

\$195.

PC MacTxt/Tangent Technologies

Handles Wordstar or DCA file conversions to MacWrite; PC and Mac programs. \$50.

Electronic Mail

InBox/Symantec, Think Technologies Division

Starter kit supports mail server and 3 users. \$350; \$125 for additional users.

InBox/PC/Symantec, Think Technologies Division

Links a PC to the InBox mail system. \$195.

Microsoft Mail/Microsoft

Electronic mail system for Macs; includes server software and desk accessory. 1–4 users \$299.95; 5–10 users \$499.95; 11–20 users \$749.95; 21–32 users \$949.95.

MacMail/Aegis Development

Network chat system; not a store-and-forward mail system. \$39.95.

Mail Center/Videx

Electronic mail with server and user applications. 2 users \$299; 6 users \$499.

MailBox/Tangent Technologies

Links PCs to Videx Mail Center. \$50.

MegaTalk Plus/MegaGraphics

Mail system only for MegaScreen users. 2–6 users \$249; 7–12 users \$349; 13–18 users \$449.

Multiuser Databases

4th Dimension/Acius

\$695.

Détente Reports/WOS Data Systems

Generates reports from dBase III files on PCs using TOPS. \$189.50.

Inside Out/Shana Enterprises

Development tools for multiuser databases. \$595.

Multiuser Helix/Odesta

3 users \$695; \$100 for each additional user.

Omnis 3 Plus Multi-User/Blyth Software

2–5 users \$990; 6–10 users \$1785; 11–20 users \$2474; more than 20 users \$2995.

WOSbase/WOS Data Systems

1 user \$195; 2–45 users \$495.

Network Software

PhoneNet CheckNet/Farallon Computing

Includes RegisterName and CheckNet for testing workstation connections. \$29.

Timbuktu/WOS Data Systems

Allows networked user to take control of another Mac. \$99.95; 2 users \$189.50; 8 users \$495; 12 users \$895; 24 users \$1650.

TrafficWatch/Farallon Computing

Dynamically monitors network traffic; includes spreadsheet macros for analysis. \$195.

Other Software

Multi-User Appointment Diary with Smart Alarms/Imagine

Multiuser calendars and scheduling. \$149.95 plus \$10 per node.

PictureBase Network Package/Symmetry

Multiuser pictorial database; 3 users \$150.

DOS computers with LocalTalk support. You can also find file servers that work with both Macs and PCs. For example, 3Com designed 3+ to support both Mac and MS-DOS machines with the same functionality (file servers, print spooling, and E-mail). TOPS versions exist for both the Mac and MS-DOS (and OS/2), and MS-DOS computers can access AppleShare using either AppleShare PC from Apple or TangentShare from Tangent Technologies.

To exchange data transparently between Macs and PCs, you'll need translation software. Some programs let Macs and PCs read each other's files. For instance, Microsoft Excel can read Lotus 1-2-3 files from a PC (via TOPS, for example), and McMax reads dBase III files. Programs such as Aldus's PageMaker trade files between the Mac and PC versions.

If a product does not include built-in translation tables, obtain a file translator program, such as Apple's File Exchange or Dataviz's MacLink Plus. Apple's program is free from your dealer, but it currently handles only a few file formats (such as DCA/RFT and MacWrite). On the other hand, MacLink Plus works with programs such as 1-2-3, Multiplan, MultiMate, WordStar, and dBase on the PC, and MacWrite, Jazz, Excel, and Microsoft Word on the Mac. TOPS now includes MacLink Plus as its file translator program.

Software for the Network

Next to sharing files, it seems that network users always want to trade messages via electronic mail. E-mail systems such as InBox and InterMail store messages meant for you and alert you to incoming mail. They usually work in the background, allowing you to send and receive mail without quitting the program you're currently using. Limited E-mail programs let you exchange messages only if both Macs are on and connected to the network. In some cases, you also have to be using the same application.

Work groups frequently need to update or retrieve information from a common data file. Multiuser databases permit more than one user to work with a database at the same time. Usually work groups store database files on a centralized file server, and each user owns a copy of the database application. Several multiuser databases have been written specifically for the Macintosh, such as 4th Dimension and Multi-User Double Helix. Other databases, such as Omnis 3 Plus, also run on MS-DOS machines. If you need access to dBase III files, you can use a database such as Detente Reports. Although most multiuser databases predate the introduction of AppleShare, manufacturers have upgraded these products to take advantage of the record- and byte-locking features found in Apple's AppleTalk Filing Protocol.

Some network programs help you diagnose problems you encounter in installing and maintaining an AppleTalk network. One of the first steps in monitoring the network is to find out who's on it. PhoneNet CheckNet lets you identify each computer by a specific

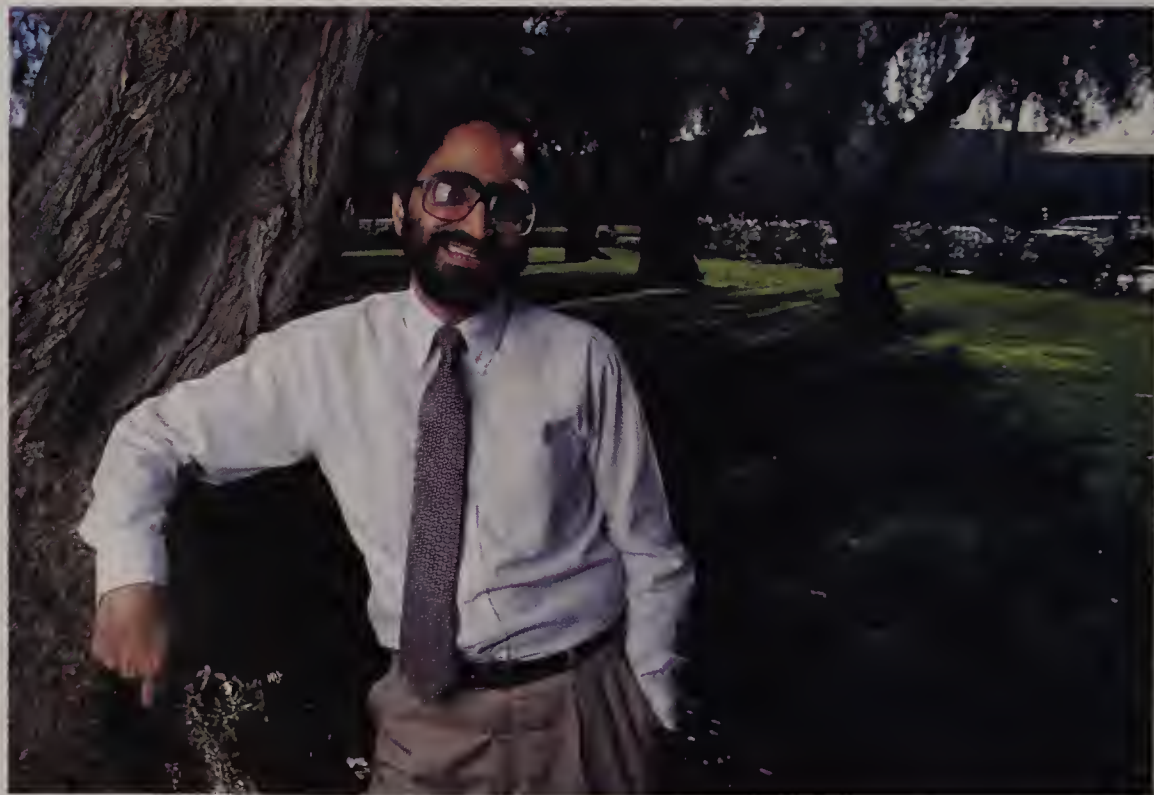
name and see just who's out there on the net. You can often locate a break in the network simply by determining which network node can't "see" the others. Another program, TrafficWatch, surveys the traffic between nodes and saves the results for later analysis in Microsoft Excel. In reviewing the traffic patterns, you may discover that one person, or device, generates or receives an undue amount of traffic. Occasionally you'll uncover wiring problems that produce a high number of transmission errors.

Starting from Scratch

A small network begun for a work group can expand to handle an entire building's or division's needs. Start by setting up a small network for four to ten people with Apple's LocalTalk cabling system or Farallon's PhoneNet. Use a centralized or distributed file server to transfer information. If you need E-mail, both InBox and InterMail are good choices.

As you add nodes, network traffic increases, and the response of the network may become unbearably slow. If you can identify either logical or physical groups, divide the network into zones by putting bridges between the groups, or if Ethernet is currently installed, use Ethernet as the backbone between the local networks.

Expanding your network may mean adding remote workstations on other floors. Obtain either re-

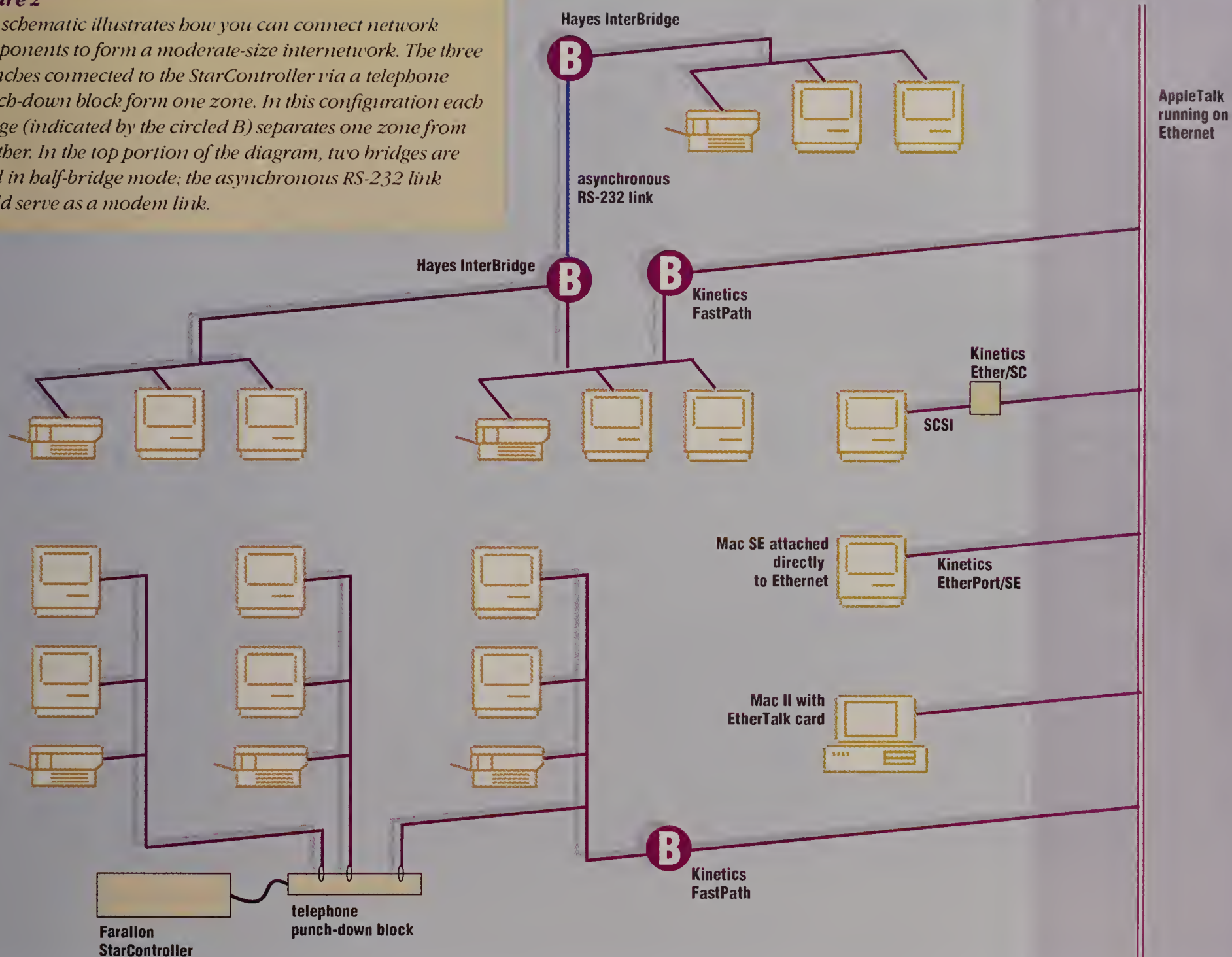


Gursharan Sidhu, manager of network systems development at Apple, was the chief architect of the AppleTalk system.

ED KASHI

Figure 2

This schematic illustrates how you can connect network components to form a moderate-size internetwork. The three branches connected to the StarController via a telephone punch-down block form one zone. In this configuration each bridge (indicated by the circled B) separates one zone from another. In the top portion of the diagram, two bridges are used in half-bridge mode; the asynchronous RS-232 link could serve as a modem link.



peaters or the StarController to extend the network's size, or chain StarControllers together and use repeaters too. The StarController also includes useful diagnostic and network-control software as part of the package.

Network traffic can become a headache for any network administrator. It's very hard to predict just how bad network response may become from looking at a diagram. Your own experience with the network will help you determine when it's worthwhile to upgrade or reconfigure. If you require higher network speeds, consider Ethernet. But don't expect Ethernet's 10-megabyte data rate to automatically speed up your Mac's network response; Ethernet's bandwidth, however, provides a decided advantage over LocalTalk and

PhoneNet—it allows more users to send information at the same time.

The accompanying table demonstrates the number of network products available for AppleTalk. The popularity of the AppleTalk network may be based on its relatively low cost and ease of installation, but the capabilities inherent in AppleTalk's protocols give offices the opportunity to expand small work groups into complex networks that share resources across a variety of network media. □


See *Where to Buy* for contact information.

Reviews

Paging through Interleaf

Interleaf Publisher 3.0

High-end word processing and publishing program for the Mac II. **Pros:** WYSIWYG; built for book-size documents; excellent graphics and chart-creating capabilities; automatic numbering. **Cons:** Doesn't use the Mac interface; not oriented to newsletter or magazine work; kerning in graphics only; can't do runarounds. **Company:** Interleaf. **List price:** \$2495. **Requires:** Mac II; 5MB of RAM; 40MB hard disk; output to PostScript devices only; large-screen monitor recommended. **Copy protection:** Registration written to floppy during installation process; otherwise not copy protected.

 Interleaf Publisher is a WYSIWYG document processor for the Macintosh II that's virtually identical to Interleaf software running on Sun, Apollo, DEC, and IBM equipment. As a result, its user interface, price, and philosophy make it most at home networked to other Macs and to its minicomputer cousins in companies where workgroups prepare heavily revised documents of 50 to 500 pages or more.

Interleaf's document processor integrates a full-featured word processor with stylesheets, a spelling checker, drawing capabilities, chart generation, the ability to edit and incorporate TIFF scanned-image files, and the ability to output to PostScript laser printers or typesetters. It is much more a super word processor built for publishing large documents than it is an electronic light table for creating advertisements and newsletters. Its closest competitor on the Macintosh is probably Microsoft Word. Page-makeup software—such as PageMaker, ReadySetGo, and Quark XPress—approaches document preparation from a page-by-page layout perspective that is foreign to Interleaf.

Interleaf has more features than either Word or the page-makeup packages, and its interface differs vastly from any of them—and from the Macintosh norm.

Clear Advantages

Three advantages that Interleaf enjoys are its ability to handle big documents, its unabashed orientation to workgroup writing and editing, and a wealth of goodies that make full-time writers and book designers drool.

A special Book Icon organizes large documents—those 500-pagers with 20 chapters and multiple charts, tables, and illustrations that require consecutive numbering. The company claims that Interleaf has no upper limit for document size.

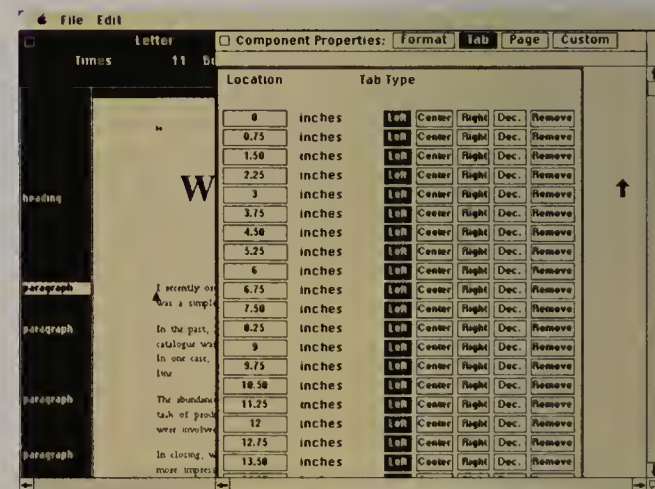
Interleaf far surpasses Microsoft Word with the flexibility of its figure numbering and text references. For example, Word can't number the sequence Figure 3.5, Figure 3.6, and so on. Interleaf can. Interleaf also maintains correct numbering across files automatically, and can anchor tables and graphics to text so that when you move the text—even with a cut and paste between files—the graphic goes too. Text references change automatically as you add and delete figures.

Chapters print in the order in which their document icons appear within the Book Icon. Organizing a big printing task is a matter of moving icons around in a window.

Index and table of contents generation is quick and easy, although to prepare an index you must specifically key in each indexing reference—you cannot cut and paste or highlight an in-text reference as you can in Word.

For workgroups, Interleaf provides individual desktops that enable users to set up separate, personalized working environments on one machine. The software provides links that let different individuals or projects use common files. Thus several different software manuals, for example, might link to the same chapter on installation. When someone makes changes to that installation chapter, all the linked manuals reflect the changes. You can also link to master documents, called *templates*, that have predefined stylesheets (called *property sheets*). Names of templates automatically appear on the Create menu.

Whenever a group of people can simultaneously access and work on a document, there's danger of one revision canceling out another. Interleaf locks documents being used by another person on the file server, but permits you to bypass the lock after acknowledging a warning. You can mark new or revised text automati-



Setting Interleaf Tabs

Interleaf tab settings are table driven, as are all format features in the program. This approach differs from most other Mac software, where you can click and drag tabs or other settings.



ically with any combination of underlining, strikethrough, or revision bars beside the paragraph.

Interleaf's property sheets define paragraph, font, and column formats, much like stylesheets in Microsoft Word. But they go further. For example, you can specify that the program balance column heights on multicolumn pages by making minute adjustments in the spacing between lines, and you can specify that adjustment factor.

You can import files from MacPaint, MacDraw (PICT and PICT2 files), TIFF (for scanned images), ASCII, Microsoft's Rich Text Format (RTF), and encapsulated PostScript (EPS). You must first save Microsoft Word files in RTF before importing them to Interleaf. Interleaf exports only to its own file format and ASCII.

The program's internal drawing capabilities are close to those of the original MacDraw, but work via menus rather than a tool palette. Drawing features include a zoom (magnifies 16 times) and contrast editing for images. The table-driven chart generation is as complete as many charting packages.

Interleaf's display preference is decidedly for large screens. On a 19- or 21-inch monitor, Interleaf shows a full page with room for other program icons left over. On the Mac II's 12-inch monochrome monitor, the program shows a partial page. In keeping with its book orientation, Interleaf does not show two pages side by side.

In layout, Interleaf's mission is to create documents that are uniform throughout—a book approach, rather than a magazine approach. You can interrupt this regular sequence of text and the graphics anchored to text with a *microdocument* of

up to one page in size. A microdocument mingles text and graphics on the page any way you want. You can edit the text and graphics; but text does not flow into the microdocument, or between microdocuments, automatically. You cannot do a runaround layout except within a microdocument.

Microdocuments act as exceptions to any book design you create. You could use them to embed an annotated map in the middle of a chapter, for instance. Although you can use microdocuments to design newsletters and advertisements, doing so to produce a design-intensive newsletter or magazine is really a misuse of the program.

Obvious Differences

In order to maintain compatibility between Interleaf on the Macintosh and Inter-

leaf running on other workstations, the program works and acts differently from other Mac products. In moving from Interleaf's standard three-button mouse to the Mac's one-button mouse, Interleaf relies on the \mathbb{H} and Shift keys to augment the mouse button.

But the Interleaf user interface ignores some of the Mac world's hard-won knowledge. Interleaf settings are all table-driven: for every tab location, for example, you fill in a number on a table and click a button showing the kind of tab you're entering. In Word, a click on a ruler is enough to enter a tab.

When preparing an index, you must key in each word to be indexed. You cannot copy and paste from existing text, nor mark existing text as an entry. In a large document—the Interleaf specialty—preparing index entries can quickly become laborious. Once you have prepared the index entries, actually generating the index is easy.

In the drawing facility, there is no tool palette. You must choose arcs or lines or whatever from a menu. Again, this procedure is different from what Macintosh users expect (see "Creating Interleaf Graphics").

Interleaf lacks some features that standard page-layout packages have. Interleaf provides no kerning, cannot flow text around the outside of a graphic (except in a microdocument), and does not allow a search for a typeface embedded in text (the next italic word, for example).

Peaceful Coexistence

Interleaf can coexist with other Macintosh software on your hard disk, with cer-

tain caveats, but you'd be advised to have as large a hard disk as possible. Upon installation of its 16 floppies, Interleaf absorbs 14MB of disk space. It grows. Also, you must run Interleaf under the Finder—not MultiFinder.

Installation takes about 20 minutes. The *Macworld* test installation encountered a bad disk. A blind call to Interleaf's customer support brought a replacement set of disks the next day via Federal Express. Support costs \$200 per year after the first 60 days, entitling you to ten hours of phone calls on Interleaf's toll-free number.

Interleaf is best installed in the root directory of a hard disk, although you can install it elsewhere. Be forewarned: Interleaf creates many small files. For good housekeeping, either dedicate a Mac II to the program, or create a special directory for Interleaf.

No other software available for the Macintosh is as well adapted to workgroup writing and editing as Interleaf. Its \$2495 price may make it most practical for full-time writers, editors, and book designers; but Interleaf offers volume discounts that can make the program attractive to companies. While its look-and-feel is less comfortable than more familiar programs, such as Microsoft Word, Interleaf is unquestionably the most powerful long-document preparation package available on the Macintosh. Perhaps exposing Interleaf to Macintosh users will result in changes to Interleaf software, and exposing Mac users to Interleaf may influence what users demand from their publishing software.

—Jeff Walden

See *Where to Buy* for contact information.

Working in the 4th Dimension

4th Dimension 1.0.4

Database and application generator.

Pros: Includes powerful procedural language; performs fast searches; few limitations; Multi-Finder aware; good use of Macintosh interface; good technical support. **Cons:** Requires knowledge of programming to create calculated or validated fields and complex applications; displays only one form at a time; slow data import/export; poor documentation; marginal performance on Mac Plus or SE. **Company:** Acius. **List price:** \$695. **Requires:** 1MB; Mac II with 5MB and fast hard disk recommended. **Copy protection:** None.

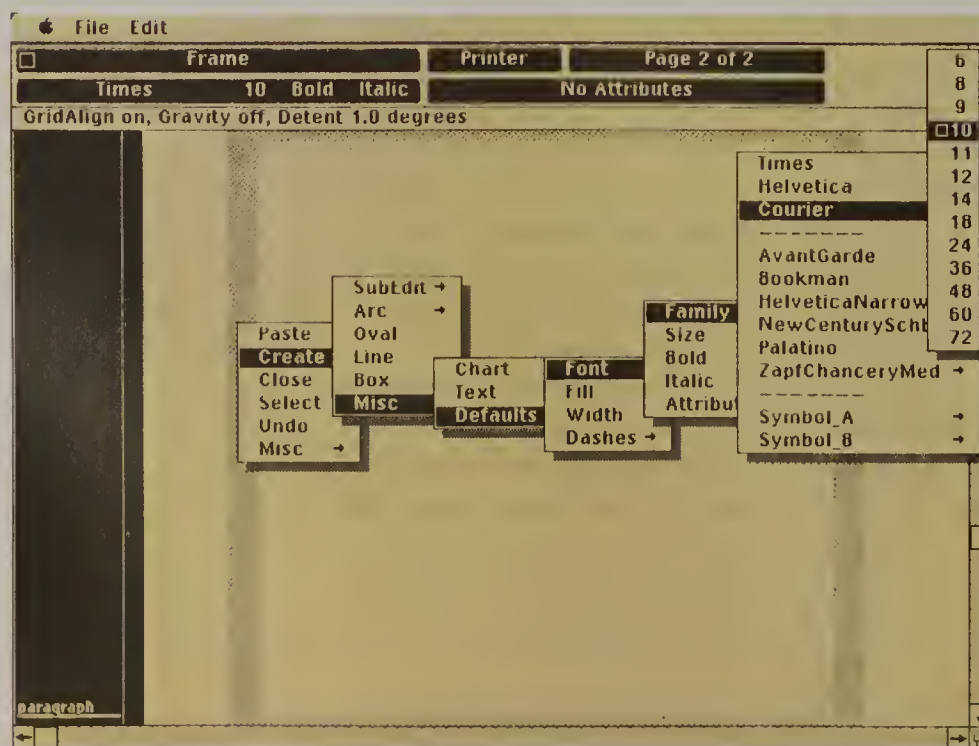


Until the debut of 4th Dimension, developers unwilling to construct a relational database from scratch were forced to choose between two application generators with very different personalities: Blyth Software's character-based Omnis 3 Plus and Odesta's icon-rich Double Helix. 4th Dimension encompasses the best of both these programs by combining the Macintosh user interface with an extremely powerful Pascal-like procedural language. 4th Dimension has all the power and flexibility required to develop custom applications capable of handling nearly any data-management task. In addition, the program lets you search, sort, and run procedures in the background when operating under MultiFinder.

4th Dimension provides separate environments for designing and using a database. The design environment allows you to create a database whose structure is visible (see "The Structure Window"). A file structure can contain up to 99 files, with each record containing up to 511 fields. To link files you simply draw lines connecting their icons. In the design mode you can also create procedures (programs) and custom menus, assign password protection, and build sophisticated form layouts using a MacDraw-like editor (see "Layout Design"). With these tools it's easy to design a relational database with Mac-like features. It's possible to build hundreds of different forms with controls like buttons, check boxes, graphics, and scrollable areas.

Creating Interleaf Graphics

To control graphic shapes, Interleaf provides pop-up menus, rather than the almost-universal Macintosh tool palette. Pop-ups have the advantage of appearing anywhere on a large screen.



In the user environment you can enter, retrieve, or search data or create simple reports without writing programs. Data can be imported or exported from or to SYLK, DIF, or ASCII formatted files via a single menu command. One drawback of the user environment, however, is that you cannot create calculated fields without writing a program. In addition, 4th Dimension can only display one form at a time (Double Helix II can display numerous forms simultaneously). This restriction seems incongruous in a database that has few limitations and otherwise makes good use of large display monitors (for instance, by allowing you to resize screens).

Finally, 4th Dimension provides a custom environment in which you create user interfaces that are virtually indistinguishable from those of a stand-alone application. Acius offers a run-time module, for about a tenth of the cost of 4th Dimension, that lets you use this customized front end. Databases designed to work as run-time modules perform flawlessly when accessed through a network by several operators simultaneously.

To create sophisticated programs with 4th Dimension, you'll need to master writing procedures—the miniprograms that

Layout Design

With 4th Dimension, you modify one of eight predefined layouts or create your own. You can cut and paste the forms you design from one layout to another or store such forms in the Scrapbook. To embed graphics, simply paste or drag them into position.

but you'll need programming skills, and you'll have to do a fair amount of debugging, to make full use of 4th Dimension's capabilities. Experienced programmers should have no difficulty grasping the essentials from the manuals and the example applications, but users unaccustomed to programming may find 4th Dimension to be more than they can handle.

The very powerful language behind 4th Dimension includes both local and global procedures and variables as well as most of the commands and constructs you would expect in an independent programming language. The language also provides tools to handle communications using the serial port. An editor lets you enter or edit lines of code either by using the keyboard or by selecting files and operators from scrolling lists displayed on screen. Once entered, the code is automatically indented, and keywords and routines are formatted in boldface. Whenever the program executes procedures, an in-line debugger intercepts errors and immediately displays the portion of code that caused the error. You can then either abort the procedure or continue in a single-step mode. In contrast to a nonprocedural, iconic language like the one used by Double Helix II, 4th Dimension allows you to write procedures that you can then transport via the Clipboard to other locations either within a single application or between applications. It's easy to assemble collections of procedures that you'll use over and over again.

Performance

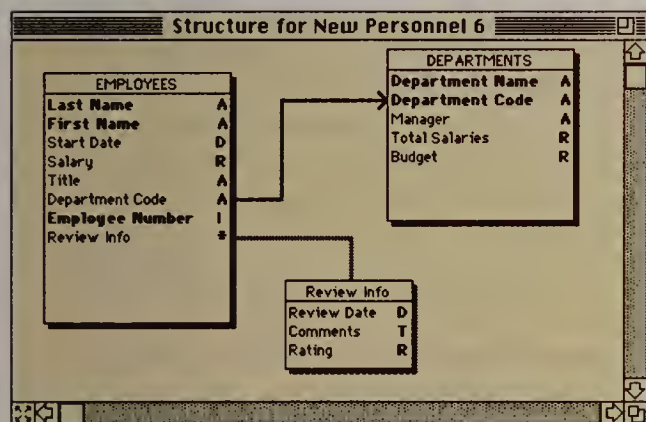
The most glaring problem with the first release of 4th Dimension is the almost unbelievably slow pace with which data is

imported or exported. The program imports data at a rate approximately ten times slower than that of Double Helix II. Importing 5000 records of modest size can take more than a hour. Operations that globally modify or update the contents of fields in records are also quite slow. In order to maintain data integrity, 4th Dimension normally forces data to be written to disk after each new record is created or modified. While this ensures virtually no data loss in the event of a crash or power failure, it also slows data import.

For almost all types of searches, however—for example, on indexed fields, on nonindexed fields, and for multiple-condition searches—4th Dimension is quite speedy. In my tests using a 6000-record database, 4th Dimension was faster than either Omnis 3 Plus or Double Helix II. However, 4th Dimension's overall performance on the Macintosh Plus and SE is only marginally acceptable. To really shine, the program needs either a Mac II or a Macintosh Plus or SE with a 68020 accelerator card. A fast hard disk is a necessity no matter what kind of Macintosh you use. Acius plans to release a free upgrade (version 1.1) with drastically improved performance (a preliminary demo version imports nearly ten times as fast as version 1.0.1 or 1.0.4).

Another limitation is that 4th Dimension requires 8 bytes of RAM for every record (the size of a database isn't important except for considerations of disk space). If you're using a Macintosh with 1MB of RAM, that limits a database to between 50,000 and 100,000 records. An 8MB Mac II raises the limit to approximately 1 million records.

4th Dimension's powerful internal language enables you to achieve effects



The Structure Window

In Design mode, you create files and establish links. The solid arrow defines a relational link between the Employees file and the Departments file. The gray arrow defines a subfield.

tie everything together. For example, buttons, menus, and check boxes incorporated in your forms won't do anything unless you link a procedure to each. You'll also need procedures to validate data, look up data in other files, or post data from one file to another. Although 4th Dimension will write a procedure to link data in one file to another automatically, you'll find that such procedures typically require substantial modification. Writing procedures to create simple applications is relatively easy,

and implement functions not possible with any other database. Furthermore, you can write procedures in any language that creates machine code and link this code into 4th Dimension. A number of these external procedures are available from Acius or on CompuServe.

Documentation and Support

Although 4th Dimension's documentation is attractively packaged, there's definitely room for improvement. No online help is available from within the application; instead you must refer to the four manuals, which total nearly 1200 pages. Although the tutorial manual does a satisfactory job of introducing the program, it doesn't lead you through all the steps required to build a complete application. The User's Guide covers the different editing tools and various aspects of the user environments, but does not specifically address topics like building calculated fields. And, even though the manuals are indexed, finding things often takes longer than it should.

Acius's technical support has gradually improved—it is now among the best in the industry. A hot line (not toll free) provides unlimited free assistance. In addition, Acius representatives and other developers can be readily accessed on CompuServe (Go Appvend; Subtopic 2 and DL2). Acius has already published more than 50 technical notes to supplement the manuals. The company offers a full-fledged support program for professional developers at \$695 per year.

A Rich Rival

4th Dimension provides a rich development environment rivaling the best database software for minis or mainframes. Developing a full-featured database application using 4th Dimension, however, requires considerable programming skill. Fortunately, Acius's technical support should help bring any serious developer up to speed in a few weeks. With the initial release reviewed here, you'll need high-powered hardware like the Mac II to achieve adequate performance with complex databases. However, Acius has promised a free upgrade with greatly improved performance. Overall, 4th Dimension is an impressive application generator that takes full advantage of the best features of the Macintosh.—*David L. Foster*

See *Where to Buy* for contact information.



A Carnival of Color

PixelPaint 1.0

Color paint program. **Pros:** Excellent user interface; dozens of impressive special effects.

Cons: Tools don't automatically scroll screen.

Requires: Mac II. **Company:** SuperMac Software. **List price:** \$495. **Copy protection:** None.



It's hard to be objective when you're in love, but I'll try. I must confess that when I started up PixelPaint, it was love at first sight. SuperMac's program has everything I ever wanted in a color paint application—and then some. OK, enough gushing already.

The Tools

Simply speaking, PixelPaint is a color bitmapped graphics program for the Mac II. You can create graphics with the program or import drawings from applications such as MacPaint, MacDraw, or Adobe

Illustrator and add color to them.

But PixelPaint can't be described simply; the program has too many features to cover adequately in a review of this size. I'll do my best to cover important features, however (for another look at PixelPaint, see "Live and in Color," *Macworld*, February, 1988).

PixelPaint's user interface is quite similar to that of MacPaint (or FullPaint or SuperPaint); anyone familiar with one of those black-and-white programs can immediately use PixelPaint's traditional basic tools. Notably absent is the usual pattern palette, which PixelPaint replaces with a pop-up color palette (a palette of patterns is available for adding texture to a painting).

When you open a PixelPaint document the tools are in Normal mode, and operate pretty much like their paint program counterparts: the pencil draws a pixel-wide line, the paint bucket fills an enclosed area, and so forth. But clicking on the box labeled Normal Tools toggles into Special Effects mode, where PixelPaint really shows its stuff. In this mode, a menu appears for each drawing tool, offering a selection of appropriate special effects. The Brush menu, for example, lists 16 options. Among them, Maximum paints on black only, useful for colorizing images pasted in from black-and-white programs; Minimum paints on white only, letting black areas show through like a watercolor wash; Push nudges the area beneath the brush in one-pixel increments; Shadow produces a gray duplicate of the brush-stroke, offset by a distance and angle you

choose; Smooth softens sharp edges; Charcoal, Wash, and Shade enable you to tint a drawing in various ways. As you can see, PixelPaint isn't merely a color version of MacPaint—it takes a quantum leap in functionality.

Other tool improvements indicate the care that went into PixelPaint's design. A few examples: you can adjust the size and shape of the paintbrush and spray can; several polygons are available, from a triangle to an octagon; the arc tool lets you combine line segments into splines or bezier curves; the angle formed by two straight lines can be constrained in increments of 15 degrees; the eraser tool erases to black, white, or the background color; pressing the Shift key causes the lasso to select an area of contiguous pixels, even if the selected shape sits on a background of another color. Another thoughtful touch is optional pop-up menus in the Special Effects mode, saving you the trek across a large monitor to the menu bar while you're using a tool. The list goes on.

Color Options

PixelPaint's color selector lets you set a painting's foreground and background colors from a palette of 256 colors. In addition, you can specify a blend and take advantage of the program's fill effect. To use the fill effect, you specify a beginning and an ending color, enter the Special Effects mode, and select a tool such as the paint bucket. When you pour paint from the bucket, the resulting range of colors forms a transition, also called a *fill* or a *blend*, between the starting and ending colors, including all the colors in the palette that fall between the two selected ones. For example, a blend from yellow to red in the default palette includes numerous intermediate shades of orange (see "Painted Pixels"). As with other PixelPaint effects, fill options abound; a dialog box lets you choose attributes such as the fill direction: top to bottom, right to left, center out, angled, and so on.

Depending on the palette and the range of colors selected, fills can be marred by color banding—distinct bars of color rather than a smooth transition. Fortunately, you can correct this problem by altering a palette's colors. More important than fixing fills, the ability to edit a pal-

ette's colors enables PixelPaint artists to create a custom set of colors for any picture. If the 12 built-in palettes don't suit your needs, you can alter any color's hue, saturation, or brightness; the program automatically saves the new palette when you save the associated drawing. PixelPaint provides a direct connection to Apple's Color Picker, System software that lets you precisely adjust colors to create a custom palette of up to 256 individual colors from among the more than 16 million available on the Mac II.

With 256 colors per palette, however, you may find it difficult to match a color you've already applied to part of a painting. Fortunately, PixelPaint features a tool that makes color matching a snap. The eyedropper tool can "pick up" a color from a painting, automatically making it the selected color.

What's Not to Like?

In the interest of objectivity, I do have a few complaints about PixelPaint. It does fall behind its black-and-white predecessors in a few respects. For example, you

can open only one PixelPaint document at a time, and the tools don't scroll the document when they hit the edge of the screen, as they do in SuperPaint. I occasionally found myself wishing for features of PixelPaint's high-end cousins, such as a stencil tool or extra-large text (the program does provide 42-point versions of Times and Helvetica, but smooth renditions of even larger sizes would be useful for making color slides). Finally, I came across a relatively obscure bug: I lost a section of a document that was off screen when I pasted in an object, dragged it, then chose Undo Drag. This glitch has been duly reported to SuperMac.

If you're in the market for a color paint program, I heartily recommend PixelPaint. Of course, little competition exists at this time. Currently, the only other contender is Computer Friends' Modern Artist—a serviceable color paint program that sells for \$300 less than PixelPaint but lacks many of the latter's features. You get, as they say, what you pay for.—*Erfert Nielson*

See *Where to Buy* for contact information.



Painted Pixels

This painting makes use of two of PixelPaint's special effects. The camel was pasted from a collection of MacPaint clip art, then colored with the brush's Maximum option, which paints only on black. The pyramid makes use of the program's fill effect, which produces a smooth transition from one selected color to another.

Real-World Project Management

AEC Information Manager 1.2

Project-oriented database. **Pros:** Excellent report formatting; special date, time, and text data entry; easy to use; flexible import/export especially useful with word processing mail merge. **Cons:** Only one work-resource clock calendar per file; 9-point Helvetica type on project-log input screen is too small on high-dpi monitors. **Company:** AEC Management Systems. **List price:** Version 1.21 \$695. **Requires:** 1MB. **Copy protection:** None.



Unlike traditional project-management programs such as MacProject or Micro Planner Plus, AEC Information Manager has no algorithms to calculate critical paths or to optimize resource scheduling. Rather, it organizes the practical side of project management.

A typical project manager's desk is a jumble of loose correspondence, reminder notes, telephone messages, and hastily prepared and updated reports and schedules. AEC Information Manager provides a flexible, project-oriented database to store, retrieve, and report this kind of information. And because the program is RAM resident, holding all project data and report formats in memory, it provides blazing speed. Depending on available RAM, you can have many files open at once, each with as many records per file and fields per record as needed.

AEC Information Manager has three modes for working with files: design, data entry, and report. In design mode, you add or modify field names and specify what type of data can be stored in each field. In data-entry mode, fields appear in a form that resembles index cards, which simplifies data input. In report mode, you define tabular report formats to view all or some of the data.

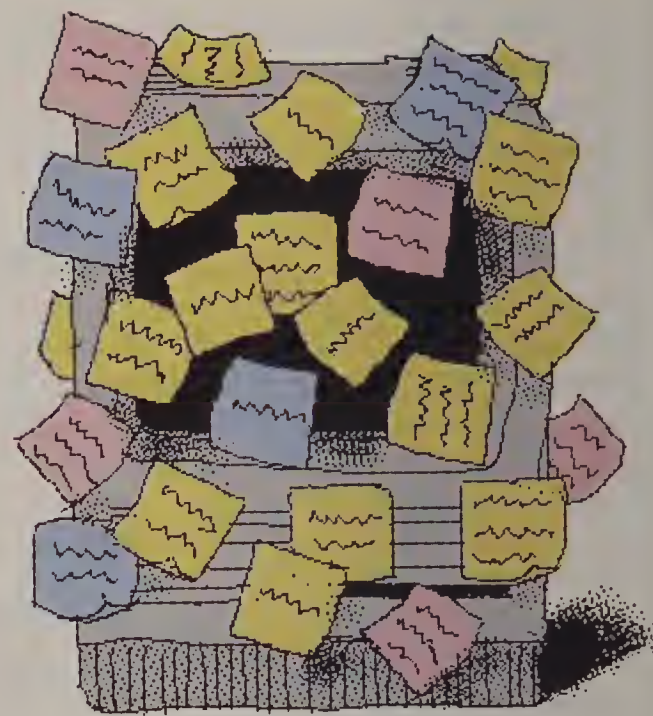
Real Power

The real power of AEC Information Manager begins to show when you define a field as one of five special types: Project Log, Submittal Log, Address, Note Pad, or List of Text. Unlike the standard database numerical, text, date, and time fields, which hold only a single value, these special fields hold a variety of data. When you

click the cursor in one of these fields a secondary data-entry window pops up. For instance, clicking on the List of Text field opens a scrollable text window in which each line is an entry in a sortable list. This makes it a breeze to relate a variety of facts to a single record, compared with the more structured approach of a relational database.

The Project Log and Submittal Log are the heart of the program's project-management capabilities. Once you have established the order of events for the project, the Submittal Log enables you to keep a running journal of jobs that are going out or coming in. You enter start or end dates, duration, and status notes. The Project Log is similar to the Submittal Log but tracks projected progress, rather than actual progress. Both types of logs perform task start, finish, or duration calculations based on a user-definable calendar that specifies the hours and days worked each week. Together with the program's alarm, which can be set to remind you of important dates, Project and Submittal logs make it easy to plan and administer all project activities and correspondence.

The AEC Information Manager report generator is outstanding. To create a report format, simply choose among numerous options. For example, calendar and numeric data can appear as horizontal bar graphs. You can select the size, shape, and fill pattern of project start and end points and connecting duration lines. Bar graphs and date lines can be mixed with columns of numeric data and text, word-wrapped to as many lines as required. This flexibility closely imitates the way people create re-



ports by hand, thereby making it easy to generate reports that are impossible to create using traditional Macintosh database programs.

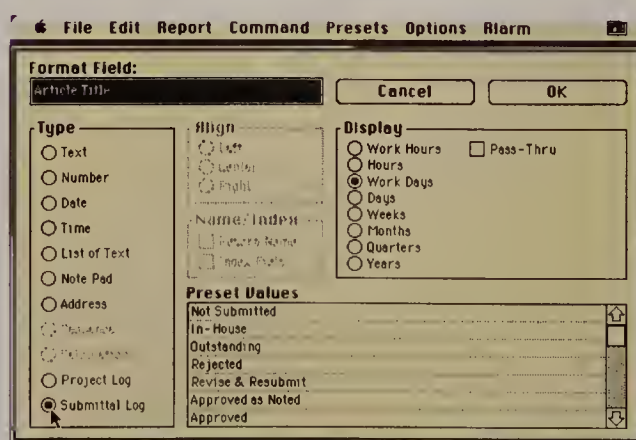
AEC Information Manager also provides highly flexible data-exchange features. Imported data may be appended as new records or inserted into the fields of existing records. Using your word processor's mail merge capabilities, you can easily combine exported address fields with notepad field text, then reformat them into daily correspondence.

Highly Recommended

Although it's powerful and useful, AEC Information Manager is not without weaknesses. Its reliance on 9-point Helvetica type in project-log fields can practically blind you with fine print when using a high-resolution, large-screen monitor. In addition, the program lacks autodialing capabilities, limits you to one work schedule calendar per file, and doesn't let you double-click on a word to select it.

But adding these features would simply refine an already solid, high-performance program. If you don't require the remarkable formatting capabilities of AEC Information Manager, then one of the less-expensive HyperCard personal time- and correspondence-management stacks may do. But if you need to manage large-scale projects or simply to organize a daily work load, you can't beat AEC Information Manager's ease of use, data import and export features, and superb report-formatting capabilities. —Jim Salmons and Timlynn Babitsky

See *Where to Buy* for contact information.




Power Fields

The powerful Submittal Log field in AEC enables you to keep track of time- and date-sensitive tasks. It automatically calculates how long it has been since each item was submitted.

Name It Again, Sam

Draw It Again, Sam 1.02

Object-oriented drawing program. **Pros:** Lets you create symbol libraries; has multiple layers. **Cons:** No dimensioning. **Company:** Aba Software. **Requires:** 512KE. **List price:** Version 1.1 \$150. **Copy protection:** None.

 Beneath a silly name and a mediocre manual lies a good general-purpose, object-oriented drawing program in Aba Software's Draw It Again, Sam. Although Sam has several features found in CAD programs aimed at architects and engineers, it's closer to the MacDraw end of the CAD spectrum. For example, Sam surpasses MacDraw by offering multiple drawing layers and a library-creation capability, but it lacks the auto-dimensioning capabilities of a high-end CAD program.

Layers and Libraries

Perhaps more than anything, Sam's library feature sets it apart from MacDraw. While some CAD programs let you create libraries of drawing elements, Sam's is unique in that it automatically creates a small icon for each picture you add to a library. Each library's elements are visible in a scrollable window at the bottom of the screen—in Mac terms, it's like seeing miniature versions of the entire contents of the Scrapbook (see "Library Files"). To paste an element from the library into a drawing, simply click on its icon and place as many copies as you need on the screen. And

library objects can be accessed by name from a menu if you prefer.

Sam's multiple layers also distinguish it from MacDraw. You can assign objects to any of ten layers, which may be visible, invisible, or grayed. Registration marks can be applied to each layer, facilitating four-color printing. (Any combination of layers can be saved or printed separately.) Layers are handy for complex drawings in which numerous individual elements might be hard to select and manipulate, and for overlaying sections of a drawing (a building's plumbing, wiring, and furniture, for example).

Superior Tools

Sam allows you to draw lines or create fill patterns in eight colors. But through clever application of QuickDraw's drawing modes (opaque, clear, and invert), many more colors can be created. For example, if you place a 50 percent red pattern over a complementary 50 percent blue pattern, the result will be alternating red and blue pixels, which will appear purple. By overlapping colors in this way, you can display and print a wide range of hues.

Color mixing, layers, and libraries are Sam's most spectacular features, but tucked away in various menus are other valuable tools. For example, Sam's Objects menu looks almost identical to MacDraw's Arrange menu: group/ungroup, rotate, flip, send to back/bring to front, lock/unlock, and reshape polygon. Then, at the bottom of the menu, you see Reshape Freeform, an option that breaks a freeform shape into its component segments, allowing you to grab individual vertices and reshape the object. Sam's Zoom option is also superior to MacDraw's: you can zoom in on an area as well as zoom out to see the overall drawing. In

addition, Sam offers parallel lines, useful for indicating walls in architectural drawings. Finally, Sam's arc tool is an improvement on MacDraw's, allowing you to specify any portion of a circle's circumference, rather than MacDraw's quarter-circle restriction.

So, what does Sam lack? Most notably, Sam is missing MacDraw's Show Size command, which displays an object's dimensions as you draw it, as well as the dimensions of existing drawn objects. Nor does it provide a smoothing function like MacDraw's. Sam is also missing dotted lines and arrowheads, which are handy for technical drawings.

Viewed in the proper perspective, Draw It Again, Sam is a fine program. It offers enough features to tempt one to compare it to a more sophisticated CAD program such as MGMStation or VersaCAD. But to do so would be unfair, because Sam is intended as a generic drawing program. According to an Aba spokesperson, Draw It Again, Sam is intended to be a "general-purpose drawing program as close to the high end as we can get while still keeping price and demands on the system low." In this Aba has succeeded: Sam sells for \$150 and runs on the 512KE.

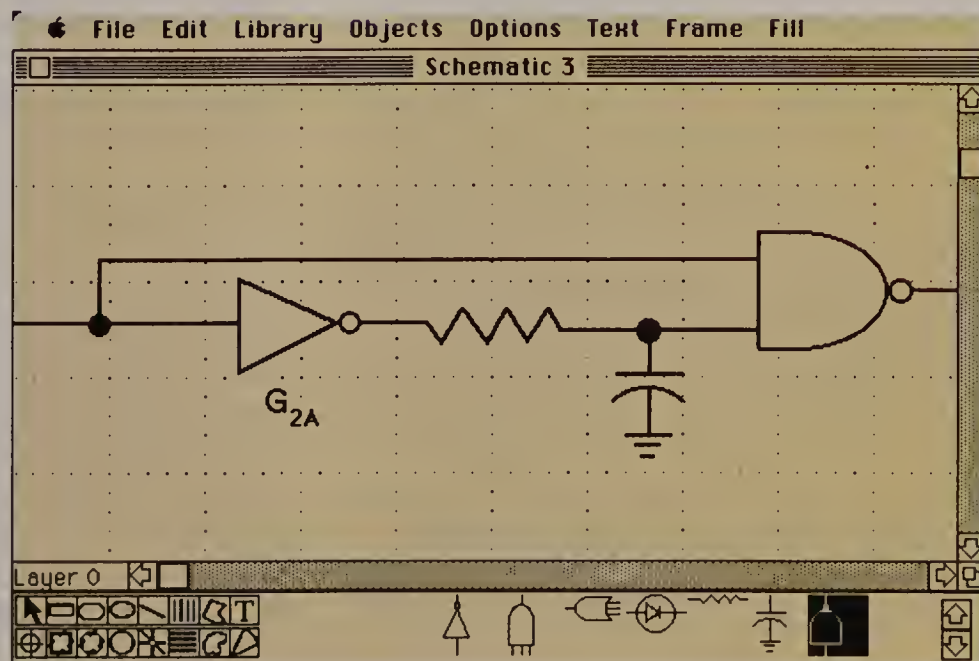
Of course, the Mac software market changes so quickly that it's hard for any program to find a niche and fill it. For example, Claris's enhanced version of MacDraw scheduled for release in the second quarter of this year will offer layers and libraries, taking away some of Sam's edge over the original MacDraw. But Draw It Again, Sam is evolving as well, and may compete with a different type of program. Version 2.0 of Sam, which should be available by the time you read this, adds bit-mapped painting tools, making it a closer relative of SuperPaint or Canvas than of MacDraw.

Rather than trying to peer into the future, however, I'll base my conclusion on the current market and the current version of Sam. I'd like to see a few features added, such as dimensioning, arrows, and object rotation by degrees, as well as a more professional manual, but if you're in the market for an inexpensive, basic drawing program, Draw It Again, Sam is a good bet.
—Erfert Nielson

See *Where to Buy* for contact information.

Library Files

Draw It Again, Sam lets you create your own libraries of commonly used drawing elements. The program automatically creates a bitmapped miniature of every object added to a library; you can edit the tiny icons if you wish.



A Hard Disk to Go

PhD

60MB SCSI hard disk with 20MB removable disk cartridge. **Pros:** Fast, reliable performance; rugged cartridges can be used for backup or working storage; good documentation.

Cons: Slow start-up; disk partitions can't be selectively mounted and unmounted; loud.

Company: Century Data. **List price:** \$5495.

Requires: Mac Plus, SE, or II.



As hard disk capacities grow, more users are waking up in a cold sweat wondering how they're going to back them up. You need to hand-feed 50 floppy disks to back up a 40MB hard disk; 75 for a 60MB drive.

One solution is a tape drive, which can back up a hard disk in just minutes (see "Safety Net for Storage," *Macworld*, August 1987). Although great for data backup, a tape drive is useless as a second storage device or an extra drive. A more versatile solution is Century Data's PhD, a 60MB hard disk with 20MB removable disk cartridges. You can use the cartridges for backup only, but they're also fast enough for day-to-day working storage.

Several large-capacity drives based on removable media are available, but the PhD is unique. Instead of using a flexible recording medium like those found in drives from Bering, Iomega, and Jasmine, Century Data based the PhD's removable cartridges on the same technology as hard disks. Each removable cartridge contains a single 8-inch metal platter, both sides of which are used for storage. The PhD's fixed disk uses three of the platters.

When you switch on the unit or change cartridges, the platter settles on its drive spindle and spins up to its 3522-rpm operating speed. The PhD's fan purges the air in the drive, replacing it with dust-free, filtered air. This routine, accompanied by a chorus of clunking and chunking sounds, takes almost two minutes.

The Drive that Roared

Once it's up to speed, the PhD performs swiftly—and loudly. The combination of a fan and two drives drowns out even an SE's fan. Fortunately, the drive comes with a 3-foot cable, so you can partially muffle the din by parking the unit under a desk. The PhD includes a setup utility that lets you format the fixed drive in different ways. You can use its 60MB as one

large disk or divide it into three 20MB volumes or a 20MB volume and a 40MB volume. Each volume has its own icon on the desktop. Unlike other hard disks that provide similar partitioning features, you can't selectively mount and unmount volumes as you work; all volumes appear on the desktop at all times, unless you start your Mac using the PhD floppy disk. Then you can mount just the volumes you want to work with.



FRED STIMSON

You can back up a 20MB volume simply by dragging its icon to the cartridge's icon. For larger volumes, you must use the Fast Copy utility, which prompts you to switch cartridges when necessary. Unfortunately, Fast Copy does not let you perform a selective backup. But the utility's speed helps make up for its inflexibility. Backing up a 20MB fixed-disk volume to the cartridge takes only 90 seconds.

All makers of removable mass storage media tell you to handle disk cartridges with care—good advice that's often ignored, especially by the postal system. To find out how a PhD cartridge would withstand shipping and general mistreatment, I kicked it, stood on it, and threw it to the floor, with the cartridge both in and out of its protective case. My sadistic urges satisfied, I reinserted the cartridge in the PhD drive and was pleasantly surprised when its contents appeared on the desktop, and downright impressed when the PhD utility's test routine found no errors.

For another test of the PhD's reliability, I unplugged the unit while saving a file. With some hard disks, this damages data and the drive. Not so with the PhD. Century Data cleverly turns the hard disk into an

electrical generator that provides just enough juice to safely abort the disk access, park the drive's heads, and remove power.

The entire PhD system performed flawlessly with a Mac SE and a II throughout a 90-day test period. On the Mac II, the drive also coexisted nicely with Apple's internal 40MB hard disk after I changed the PhD's SCSI address (using DIP switches conveniently located below the cartridge door).

I'd like to see a more flexible backup utility and I'd like to have a quieter fan, but overall, the PhD is an excellent performer. At approximately \$67 per megabyte, the PhD isn't cheap, but it's more versatile than a hard disk and tape backup combination, and it's built like a tank. If you're looking for a rugged, capacious hard disk that's a breeze to back up, the PhD may be just what the doctor ordered.—Jim Heid

See *Where to Buy* for contact information.

An EtherPort in the Storm

EtherPort SE

Ethernet communications board for the

Mac SE. **Pros:** Good integration with VAX VMS and UNIX software; high network-carrying capacity. **Cons:** Software for integration with IBM PC doesn't exist; hard drive and processor bottlenecks may limit speed increase to between 30 and 40 percent in lightly loaded networks.

Company: Kinetics. **List price:** \$795.

Requires: Mac SE; Ethernet cables.



With Apple's current emphasis on connectivity with DEC and IBM PC-based environments, it was only a matter of time before a full range of Ethernet add-on boards became available for the Mac. Kinetics, now a division of Excellan, has completed its suite of Ethernet products with the EtherPort SE board.

Kinetics' first product, FastPath, is an AppleTalk/Ethernet gateway that allows you to connect an entire AppleTalk network to Ethernet, the most popular network in the minicomputer and workstation world. One limitation of FastPath is that since AppleTalk is significantly slower than Ethernet (230.4 kilobits per second versus 2.5 megabits per second), if several members of a work group are doing large file transfers

between a Mac and an Ethernet-based machine, the whole AppleTalk network tends to bog down. AppleTalk networks are also poorly suited for integrating large work groups with minicomputers or workstations, due to the limitation of 32 active nodes per network.

Unlike FastPath, EtherPort SE links only a single Macintosh to Ethernet. This bypasses the AppleTalk bottleneck and results in higher performance and carrying capacity. Through use of the EtherPort SE, for example, you can network 50 to 100 Mac SEs to a DEC VAX—using the VAX for file service and print spooling in a transparent manner—without slowing down the network.

Etherizing Your Mac

EtherPort SE hardware consists of two boards: one that installs in the Mac SE slot and another that attaches to the back of the SE (purchasers should make sure they receive board model KFRE-1, the current version). An EtherPort SE Manager V1.0 installer program, plus NCSA Telnet V2.1e (EtherTalk) and NCSA Telnet V2.1a (AppleTalk) software are required for operation with products such as TOPS 2.0.

So as not to void the warranty, a Kinetics Certified Dealer should install the EtherPort SE hardware. Configuring the board simply requires flipping a switch to choose between thick and thin Ethernet connectors; there are no DIP switches or jumper pins to set. The Manager V1.0 program installs a driver called EtherTalk, which allows AppleTalk-compatible software to run over Ethernet cabling. As part of the installation process, it is also important to modify the boot blocks to increase the space devoted to the system heap. This is accomplished through a Kinetics program called Boot Edit.

The Network option allows the user to choose between the built-in AppleTalk network or the EtherPort SE with its EtherTalk driver. If you have all the correct hardware and software versions, software installation should take no more than five minutes.

Choosing the Network

Before committing to the EtherPort SE, be aware of some of the larger issues concerning Ethernet. While AppleTalk provides a complete set of networking protocols, Ethernet does not; Ethernet users

must decide how to fill in the remaining layers of the networking system to provide the services they want. This can be done through EtherTalk (an Ethernet-based implementation of AppleTalk), TCP/IP (a Department of Defense-based protocol now popular with universities and the scientific community), and other protocols such as DECNet.

In the EtherTalk camp are such packages as AppleShare and TOPS, both of which provide file-serving capability and are compatible with EtherTalk on the Macintosh. While both AppleShare and TOPS offer AppleTalk-based software and boards for IBM PCs, the equivalent EtherTalk software is unavailable, thus excluding IBM PCs from an EtherTalk-based solution.

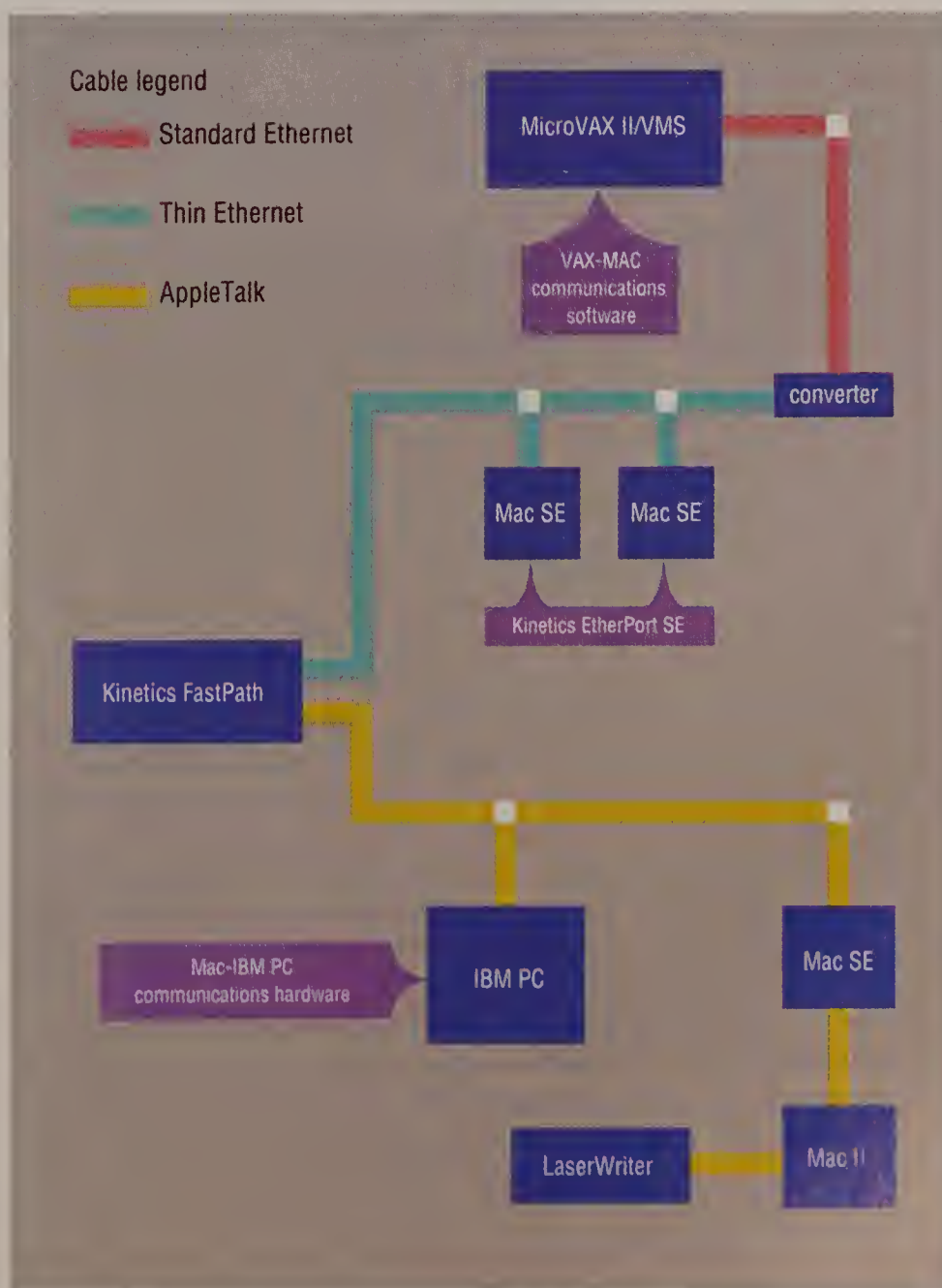
The situation for UNIX-based file servers is much better. TOPS/UNIX supports EtherTalk, as does PacerLink, which provides UNIX-based AppleShare. PacerLink also provides AppleShare support for VAX VMS machines as well.

In the TCP/IP camp are programs such as File Transfer Protocol (FTP), a very pop-

ular protocol used for file transfer among dissimilar machines. While many UNIX-based systems support TCP/IP and FTP, no full implementations are available on the Macintosh or IBM PC without running the A/UX or Xenix operating systems. For example, NCSA Telnet, the FTP implementation developed at the University of Illinois SuperComputer Center, does not support use of an IBM PC or Macintosh in host mode; in practice this means that a Mac or IBM PC cannot initiate a file transfer without the intervention of a UNIX-based system. Thus with only Macs and IBM PCs on the network, file transfer is impossible.

To remedy the current deficit in TCP/IP support, Apple expects to develop drivers for the Mac sometime in 1988, with Kinetics developing its own extensive TCP/IP software by midyear.

There may be hidden costs in going the Ethernet route. Since low-cost PostScript printers typically only provide an AppleTalk connection, if you want to use an AppleTalk-based printer such as the LaserWriter you must either connect it in RS-232



Activating EtherTalk

To activate the Ethernet connection, select the EtherTalk Link Access Protocol (ELAP) driver after clicking on the Network control panel icon. The Mac SE must also be rebooted.

mode (requiring the purchase of spooling software such as Kinetics' Kspool to allow Macs to print on it without switching settings), or purchase Kinetics' FastPath.

Performing under Ether

I tested the EtherPort SE in Mac-to-Mac communications using TOPS 2.0 in both the Ethernet and AppleTalk modes. I connected two Macintosh SEs—both included Apple 20MB internal hard drives—with the RAM cache switched off. Despite the fact that Ethernet is rated at over 40 times the speed of AppleTalk, my tests showed only a 30 to 40 percent decrease in transfer time when I selected Ethernet as the network medium instead of AppleTalk. As this does not take into account Ethernet's higher carrying capacity, the results would be likely to shift more in Ethernet's favor as the network becomes heavily loaded—a situation that might occur in a large work-group environment with extensive minicomputer file service.

These tests made it clear that the strength of the EtherPort SE is in networking large numbers of Mac SEs to minicomputers and workstations, not to other Mac SEs or IBM PCs. For microcomputer networks requiring only occasional Ethernet access, a less-expensive solution is to link the Macs and IBM PCs with AppleTalk, using AppleShare or TOPS. Then one or more FastPath gateways can provide Ethernet connectivity.

To Net or Not to Net?

Ethernet is not a good solution at present for networks that must include IBM PCs, since software support for TCP/IP and EtherTalk on the PC is poor. Since the Mac SE lacks the horsepower to keep up with Ethernet, users should not expect more than a 30 to 40 percent improvement in transfer speed compared to AppleTalk networks. So if IBM PC connection or transfer speed are your concerns, the EtherPort SE board is not for you.

The main advantage of EtherPort SE is increased network carrying capacity, or the ability to add machines to a network without performance degradation. Many companies must keep information on a central mainframe or minicomputer to enhance security or coordination. For them, using the EtherPort SE allows a large network of Mac SEs to access that mainframe or minicomputer as a file server, while maintaining an acceptable response. —Bernard Aboba

See *Where to Buy* for contact information.

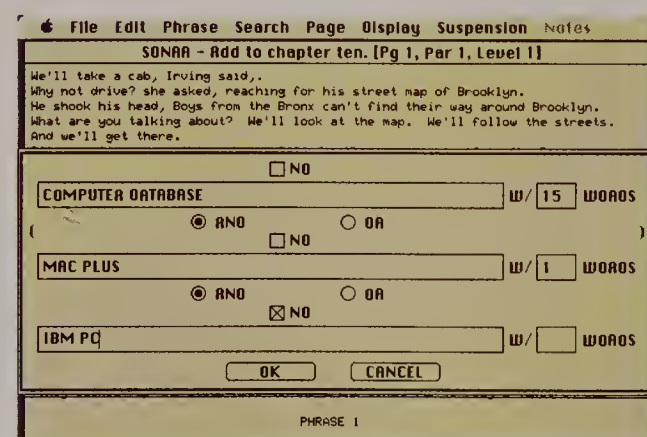
Getting Control of Your Data

Sonar 4.5

Text retrieval system. **Pros:** Very flexible and fast. **Cons:** Takes up a lot of disk space, depending on document size; manual needs improvement. **List price:** \$195. **Company:** Virginia Systems Software Services. **Requires:** 512K; 1MB memory. **Copy protection:** None.



Sonar can save you a tremendous amount of tedious work searching through large documents or multiple documents to prepare reports. This is software for the attorney who has to pore over thousands of pages of depositions to prepare briefs; for the executive who must scan correspondence, memos, and sales figures to create summary reports for the board; and for the researcher obliged to scrutinize hundreds of downloaded abstracts to compile bibliographies. This text-retrieval system will search at high speed any size or number of documents formatted in text only, MacWrite, WriteNow, Microsoft Word, More, or Trapeze, hunting for words, phrases, or relationships.



Complex Searches

This screen is an example of Sonar's Complex Phrase facility, which allows you to narrow your search.

More Than Just a Search Function

On the simplest level, Sonar does what the search function on a word processor or outliner does, except that Sonar can do it with multiple documents. Type in the word or phrase you want to find, and Sonar very quickly displays the paragraphs where the word or phrase occurs. It took me less

than five seconds to find all occurrences of a common word in an 800K document. Virginia Systems claims Sonar can read through 5000 pages a minute.

But besides its speed and ability to access multiple documents at once, Sonar has other advantages over a word processor's search function. For one, Sonar can search for as many words or phrases at a time as you like. And you can have it display an Occurrence Analysis that lists the document name and page numbers where it found each word or phrase.

Sonar also lets you carry out very sophisticated searches. Its Complex Phrase facility allows you to set up such instructions as: "Show me all paragraphs that contain *computer* and *database* within 15 words of each other and *Mac* and *Plus* immediately next to each other, but do not contain the words *IBM* or *PC*" (see "Complex Searches"). Sonar takes a lot longer to find these complex phrases, but that's the price you pay for all that power.

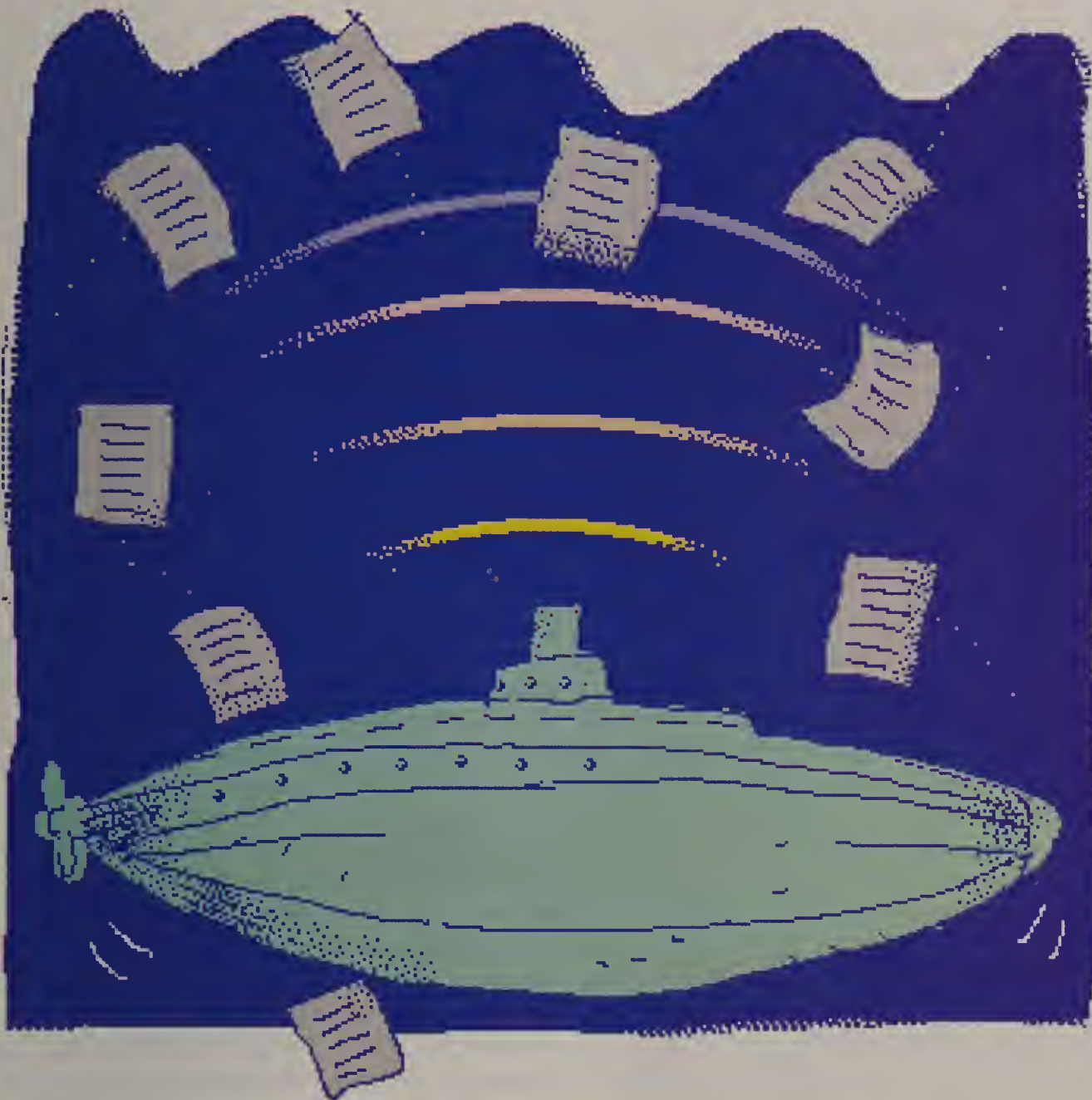
Sonar provides two ways for you to "take notes" as you search through documents. You can have words, sentences, and paragraphs accumulate in the Clipboard for pasting into a word processor later—a capability not found in most word processors, which erase any previous entry to the Clipboard when a new entry is added.

Another powerful note-taking feature is Sonar's Note File. You create notes by specifying pairs of subjects and the relationships between them. Then you can have Sonar tell you if there is an indirect relationship between any two subjects. Say you created the following four notes: "Bob Smith is the partner of Jeff Jones"; "Jeff Jones is the husband of Mary Jones"; "Mary Jones works for the Ajax Company"; "Ajax Company owns ABC Computer". If you later ask if there is a relationship between Bob Smith and ABC Computer, the program displays those notes.

Sonar has two modes for creating an index to your documents. It can create an index of unique words that appear in, say, only 5 percent of all paragraphs. That would eliminate common words that usually need not be indexed. Or you can create a text-only file in your word processor of the words you want to be indexed. In either case, Sonar creates an alphabetical list of the words that includes the page numbers where each word appears.

It's Not for Everyone

Sonar is primarily for people who must work with an immense amount of



text. If you only have to search a few documents, you'll probably find a word processor's search function more convenient than quitting from the word processor, going into Sonar, setting up the documents, and then returning to your word processor. And although Sonar, in a sense, turns text files into a database, it cannot replace a database-management system like Works or FileManager. Nor does Sonar provide the discipline imposed by database systems that require, for instance, names of cities to be in one field and names of people to be in another. So if you use Sonar to look for all your clients who live in Seymour, Connecticut, you may also come up with a letter from your cousin Seymour who lives in Hohokus, New Jersey.

One problem with Sonar is that, although it runs fast, its setup is slow and uses up a good deal of disk space. Before it accesses documents for the first time (and again each time the documents have been altered), Sonar creates a directory that contains information about the document files. And when used with some word proces-

sors, it also has to create a text-only version of the document. Setting up a 140-page, double-spaced Microsoft Word document (about 32,000 words) took almost seven minutes on a Mac Plus.

A larger problem is that the Sonar directory and the duplicate text-only files increase disk usage from about 40 percent to about 130 percent of the size of the original document (the larger the document, the smaller the percentage). This precludes, for all practical purposes, using Sonar on a floppy-based system. But a 70 or 80 percent increase of disk usage will strain many hard disk systems as well.

A final problem is the quality of the manual, which at times suffers from poor organization. Too often, examples are used in place of, rather than to illustrate, instructions.

Despite these problems, Sonar is a unique, powerful, full-featured, and relatively easy-to-use program. It's hard to picture the Mac being used in large corporate, legal, medical, or governmental libraries without it.—*Lawrence Stevens*

See *Where to Buy* for contact information.

The Way to Word

Microsoft Write 1.0

Word processor. **Pros:** Fast, easy selection of text; simple document formatting; online help.

Cons: Manual repagination; must use Page Preview to see columns, headers, and footers.

Company: Microsoft. **List price:** \$175.

Requires: 512K. **Copy protection:** None.



Microsoft Write is a simplified version of Microsoft Word without Word's style sheets, customized menus, glossaries, file linking, integrated outlining, automatic hyphenation, table-of-contents and index generation, mail merge, and page set-up. Most of these features don't belong in a basic word processor anyway, but a few would help even the casual user prepare reports and letters. In fact, Write does not even offer simple outlining, nor does it provide minimal control over default style settings—two features that should be in all word processors.

Some Simplifications

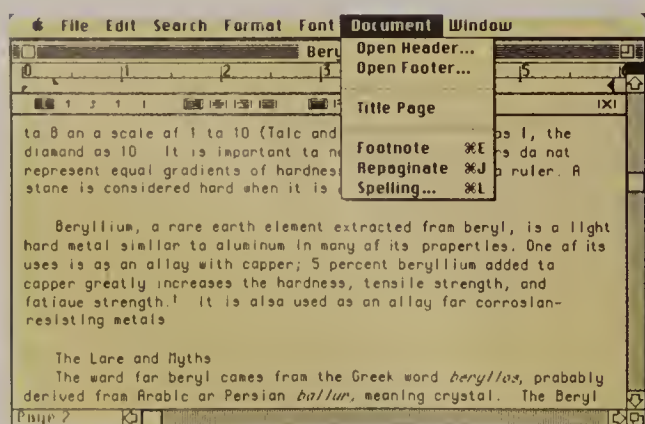
Overall, Write is an easy-to-use word processor that offers one of Word's principal strengths: fast and intuitive selection of text. To help the novice, Microsoft rewrote sections of the online help files and provided a more detailed index, as well as other elementary information such as how to join two paragraphs.

To simplify the complex formatting used in Word, Microsoft consolidated document formatting and font selection into fewer, more accessible menus. All style choices are displayed under Format and Font menus, with no submenus for character, paragraph, and section formats, or style definitions. Style and Shortcut ⌘-key equivalents are the same as in Word. While this similarity may make it easier for someone to learn Word after learning Write, the extensive series of command key equivalents could overwhelm the novice. The format menu includes two useful options—one prevents a page break from occurring between two paragraphs, the other prevents a page break from occurring between lines in a paragraph. The document menu lets you create a title page—a cumbersome series of steps in Word.

Headers and footers are similar to Word's—you can insert multiple lines and place them horizontally with the ruler or



vertically in the Page Preview mode. You cannot, however, designate odd and even pages. The program also includes an 80,000-word spelling checker. It's fast, and it suggests sensible alternatives when it finds words it assumes are spelled incorrectly. Microsoft modeled Write's window-management capabilities on Word's. The split screen, horizontal scroll bar, and Window menu make it easy to copy, cut, and paste information in the same document or between documents. Unfortunately, Microsoft did not change two of Word's annoying shortcomings—the lack of dynamic re-



Formatting Made Easier

Document format choices are displayed in Format, Font, and Document menus. Write does not include many of Word's advanced options.

pagination, and the fact that you can't see headers, footers, and columns on screen. You still must select Page Preview to see these elements displayed. Novices, however, will find the dynamic margin settings in the Page Preview window easy to use.

Write offers tabular and newspaper column formats, but not side-by-side columns. Microsoft implemented the column selection and table functions from Word, which means you can select, copy, move, and delete columns, as well as total the values in each column. The ruler bar includes a marker to draw hairlines between columns for tables and forms. Write also includes mathematical typesetting, a seemingly advanced function that Microsoft hopes will make Write more useful to educational institutions.

Is It Write for You?

Write offers many more capabilities than Claris's MacWrite. For a comparable price, however, T/Maker's WriteNow may prove easier to use, particularly because it displays headers, footers, and columns and offers dynamic repagination (for an overview of word processors, see "Just Write," *Macworld*, February 1988). WriteNow takes up less room on disk (79K, compared with 287K), and version 2.0 currently in beta corrects some of the program's earlier faults. The new version of WriteNow will include a 100,000-word spelling checker, internal import/export file formats (the Translator will be linked into the program), window menus, and mail merge.

As a stand-alone word processor, Write does not offer some features even a novice might want. But it does give you easy control over page set-up and window management, and it offers the best text selection tools of any word processor. Write's extensive import/export file formats may help in offices where MacWrite and Word documents are routinely exchanged between the Mac and the PC. But most word processors already include these file formats.

It may not make sense to buy Write if you intend to upgrade to Word, or if you need Word's more powerful features. Ask your dealer for a demo of Word's short menus (which hide some features), and compare Word to Write. While the idea of a basic word processor may sound appealing, it's only good if it solves your needs.

—Janet McCandless

See *Where to Buy* for contact information.

Sum Fun

Math Wizard

Educational program (ages 5–10). **Pros:** Suitable for young kids; two can play; skill levels can be adjusted. **Cons:** No tutorials or guidance with math concepts; games and animation are unsophisticated and repetitive; keyboard input required. **Company:** Unicorn Software. **List price:** \$49.95. **Requires:** 128K. **Copy protection:** Key disk; doesn't install on hard disk.

MathTalk 1.0

Educational program (grades K–8). **Pros:** Instructions, tutorials, and feedback are spoken aloud; custom problem sets can be entered and solved; guidance provided for difficult problems. **Cons:** Not as gamelike as other programs reviewed. **Company:** First Byte. **List price:** \$49.95. **Requires:** 512K. **Copy protection:** None.

MathTalk Fractions 1.0

Educational program (grades K–8). **Pros:** Games are consistently entertaining; instructions and feedback are spoken aloud; custom problems can be entered and solved. **Cons:** No tutorial help with underlying concepts. **Company:** First Byte. **List price:** \$49.95. **Requires:** 512K. **Copy protection:** None.



Well-designed educational software can make learning basic math seem more like a fun game than a drill. For this review I looked at three Macintosh programs. I had some help from a distinguished panel of software evaluators: nine-year-old Ben, six-year-old Josie, and a random collection of their friends.

Math Wizard

Math Wizard captured the kids' attention first with its menu full of exciting-sounding games. Each of the four games described below uses simple animation to make basic arithmetic keyboard drills interesting. Wizard's Flash is a flash-card drill in which an on-screen Wizard nods approvingly each time the child enters the correct answer to a problem. The type of problem (addition, subtraction, multiplication, division, or mixed) and the level of difficulty (from one-digit sums to complex problems requiring the use of pencil, paper, or calculator) can be adjusted at the beginning of each session.

In Dragon Race, a pair of dragons dash toward the finish, each one moving forward with each correct answer by its young handler, adding a competitive edge for children working in pairs. Elf's Equations is a multiple-choice drill in which students type the missing term in a simple equation ($4 + ? = 11$). And the Troll's Toy Shop is filled with multiple-choice word problems.

My program testers enjoyed playing all four games for several practice sessions, but their interest waned when the word problems started repeating (with different numbers)—the easy problems began to seem too easy, and the program provided no tutorial help with the harder ones.

MathTalk

Like Math Wizard, MathTalk includes drill-and-practice games for mastering basic arithmetic tables. MathTalk's TableTalk section challenges the learner to fill in the cells of an arithmetic table in a random order, with or without a time limit. The Mystery Number section displays simple equations with missing elements that the student fills in. There are no racing dragons or dancing elves in these games, but a talking Professor Matt A. Matics (using the built-in SmoothTalker speech synthesizer) provides spoken rewards aplenty. The professor also offers guidance with customizable math books in other modules of the program. The math book feature is the major strength of MathTalk. The program disk comes with four files, called books, that contain the simplest problems for each math operator. But students, parents, or teachers can easily use the program's templates to add books containing more complicated problems.

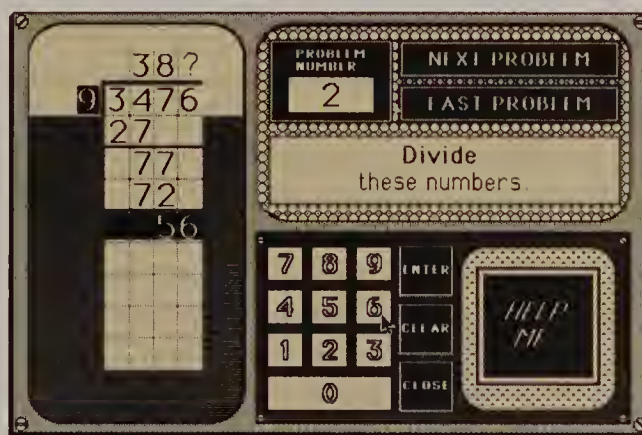
Once such files have been created, kids can solve the problems on the computer, receiving step-by-step guidance when necessary. Unlike Math Wizard, MathTalk breaks large multiplication and division problems into steps that can be conquered by younger kids (see "Divide and Conquer"). When the learner makes mistakes, the professor offers to work the problem on-screen before letting the child try again. There's even a Talking Calculator for getting instant answers to particularly tough problems.

MathTalk didn't jump out and grab my panel of testers, but it kept them interested—and learning—long after Math Wizard had grown old.

MathTalk Fractions

The robot-voiced professor returns in MathTalk Fractions. Like MathTalk, this program allows students to enter their own problems, from homework or imagination, for the professor to check. MathTalk Fractions also provides a wide variety of imaginative games that take the drudgery out of drills with fractions, decimals, and percentages. These range from the clever carnival games in the Fun House to the TV-style Team Challenge, in which the learner sets the difficulty of the game by choosing from a field of six cartoon opponents with different mathematical skill levels.

While MathTalk Fractions is clearly a better entertainer than MathTalk, it's a weaker tutor. Simple hints replace the "first do this step" tutorials here, and the professor doesn't hold office hours in MathTalk Fractions. A learner who doesn't know or remember how to add together two fractions with different denominators, for example, will have to ask a human to explain the underlying principles. Still, the program provides a wonderful playground where kids can practice fractions.



Divide and Conquer

MathTalk leads the learner step-by-step through complicated long-division problems like this one.

Summing Up

Each of these programs has something special to offer: Math Wizard games are fun for the youngest arithmetickers; MathTalk provides better tutorials and more thorough lessons; and MathTalk Fractions—most appropriate for grades K through 6—is a highly entertaining medium for practicing fractions, decimals, and percentages. MathTalk is probably the best of the three as a stand-alone educational program, but any of these programs would work well as a supplementary practice tool in the classroom or the home.

—George Beekman

See *Where to Buy* for contact information.

Apple's Junior Business Printer

ImageWriter LQ

Twenty-seven-pin, wide-carriage dot matrix printer for the Mac. **Pros:** Excellent print quality; high-speed printing; flexible paper-handling options. **Cons:** Occasional paper-feeding glitches, with resulting imperfections in output quality; extremely noisy. **Company:** Apple Computer. **List price:** \$399. **Requires:** 512KE.



With the new ImageWriter LQ, Apple has finally staked a claim in the high-resolution dot matrix printer market. Equipped with a 27-pin print head for razor-sharp type, a wide carriage for oversize spreadsheet printouts, enough paper-handling options for any office, and respectable speed, it's a formidable contender.

The LQ connects to the Mac through a standard ImageWriter cable, or via AppleTalk, if you install an optional board for that purpose in the printer (other options include color ribbons and a cut-sheet feeder). Before you can print, you must add the LQ's driver and a set of fonts to your system disk(s). For every type size you plan to print, the driver requires a second font description that's three times that large to achieve the LQ's potential quality. Typefaces supplied with the printer include Times Roman, Helvetica, Courier, and Symbol, each with the dual descriptions needed to print at 9, 10, 12, 14, 18, and 24 points.

With two files for every printable font, the LQ makes a big demand on disk space—especially since the bigger font sizes take up much more room in the system file. Installing only the six Times Roman sizes, for instance, costs you 209,742 bytes. Floppy disk systems obviously won't be able to accommodate all of the LQ fonts at once, and even hard disk users may be reluctant to install the entire set.

Although the LQ offers a range of paper-handling options, some function imperfectly. The unit accepts pin-feed paper through slots in both the rear and the bottom (for slotted printer stands). When set for bottom feeding, however, the tractor mechanism runs only in the forward direc-

The ImageWriter LQ is a versatile machine that should help Apple establish its reputation as a business-oriented computer company.



FRED STIMSON

tion, so it won't work with graphics software that moves the paper up and down. A more serious problem with pin-feed paper is the printer's tendency to occasionally misfeed and crumple the paper, particularly when the tractor is operating in reverse. The LQ does better at single-sheet feeding, which can be done manually or with an optional cut-sheet feeder.

Quality and Performance

The LQ turns in solid, if less than ideal, performance in terms of print quality and speed. On the graphics side, the LQ theoretically offers 320-by-216-dots-per-inch (dpi) resolution, but until software programs are updated, graphics from the LQ will look no sharper than they would from a standard 72-dpi ImageWriter. In the text department, the LQ's six built-in fonts include three perfectly readable draft fonts and an outstanding letter-quality Times-like proportionally spaced font. However, you can access only one of the draft fonts

with the Macintosh driver. (There is a button for choosing among the built-in fonts, but it is only activated when used with an Apple IIGS.) When you select Best or Faster modes the Macintosh driver automatically downloads character bitmaps from the Mac.

In Best mode, with the necessary triple-sized versions of a document's fonts in place on the system disk, you get beautifully sharp output that you'd be hard pressed to distinguish from that of a LaserWriter. The characters are of far superior quality to those produced by earlier ImageWriters. Without the proper font files, or if you choose Faster mode, the driver downloads bitmaps of the screen fonts, with rather unattractive results.

In Draft mode, the LQ speeds through text; rated output is 250 characters per second, and I printed an average page of text (about 500 words in one font) in 40 seconds. That's competitive with the real-life performance of the LaserWriter, despite the

latter machine's 8-page-per-minute rating. The LQ's Best mode slows things considerably, however; it took 3 minutes, 40 seconds to print the same page. Best mode grinds to a snail's pace if you change fonts in your document.

Often enough to be irksome, slight paper-feed sputters result in small but noticeable imperfections in text characters. Lines of characters sometimes appear slightly wavy, giving them an almost italic look; sometimes they are too short or too tall. Such glitches are much less frequent when the head is set to print unidirectionally.

Be forewarned that the LQ is one noisy machine. In Best mode, or when printing dense graphics, it emits a grinding, buzzsaw screech, and even its draft modes are louder than those of similar dot matrix printers.

Laser, LQ, or Other?

For some businesses, the speed of its Draft mode and the high quality of its text output make the ImageWriter LQ a workable alternative to a Laser printer. Of course, laser printers are faster and quieter, and with PostScript they're unbeatable for printing page layouts. But a LaserWriter can't print on wide paper, and since it's not an impact printer, it can't print multicopy forms. Laser printers are much bulkier than the LQ. And even the cheapest PostScript machine initially costs at least \$2000 more than the LQ and costs more to supply and maintain.

There are several other excellent 24-pin wide-carriage printers that list for about \$200 less than the LQ, and most of them make less noise. Although you can't use Apple's downloadable fonts with those machines, you get attractive text with their built-in letter-quality fonts, and you save room in the System file as well.

On the other hand, choosing the LQ means freedom from worries about compatibility and connectivity. And although the newest ImageWriter has a few flaws, it's a sensible choice if your budget is too small for a LaserWriter, or if you need the special capabilities that only a dot matrix machine can give.—Steve Cummings

See *Where to Buy* for contact information.

This line is printed in 10 point Courier in Best mode

This line is printed in 10 point Courier in Best mode, without a 3X font image

This line is printed in 10 point Courier in Faster mode

This is a sample of the ImageWriter LQ's draft font

ImageWriter LQ Output

These are examples of the ImageWriter LQ's output in Best mode, Best mode generated from bitmaps of the screen fonts, Faster mode, and Draft mode.

Coaching Pays Off

Spelling Coach 3.0

Spelling Coach Professional 3.0

Spelling checkers. **Pros:** Large group of dictionaries; guaranteed error-free by Merriam-Webster; DA and stand-alone spelling checkers included; interactive and batch modes; strong use of command keys; flexible configuration options. **Cons:** Slow batch-checking with DA; slow when guessing correct spelling; requires a lot of disk space if all options installed. **Company:** Deneba Software. **List price:** Spelling Coach \$99.95, Coach Merriam-Webster Thesaurus \$59.95, Spelling Coach Professional \$199.95, Network Version \$495. **Requires:** 512KE; Spelling Coach requires external drive; hard disk recommended for Spelling Coach Professional. **Copy protection:** None.



The only difference between Spelling Coach and Spelling Coach Professional is that Spelling Coach Pro offers a dictionary with word definitions and includes a thesaurus, which Spelling Coach users can purchase separately. The user who installs all of Spelling Coach Pro's options will end up with over 2.3 megabytes of spelling checker. Because both programs are modular, less ambitious users (or those with hardware limitations) can customize a very adequate spelling checker able to run on a 512KE Mac with two floppy drives.

Spelling Coach and Spelling Coach Pro are essentially new versions of the MacLightning desk accessory. (Deneba is offering these upgrades to registered owners of MacLightning—\$25 for Spelling Coach and \$95 for Spelling Coach Pro.) The most radical difference is Spelling Coach's inclusion of an independent spelling checker along with the DA. While the DA version still offers a batch-checking mode, this new module, Coach Speller, is a stand-alone batch-checker that you open from the desktop.

My chief complaint about MacLightning (see "The Final Spelling Test," *Macworld*, October 1987) was that the batch-checking facility was slow and cumbersome. Although improved in the Spelling Coach DA, this feature is still sluggish. The stand-alone Coach is also slow when guessing correct spelling, but it is quite fast when making corrections.

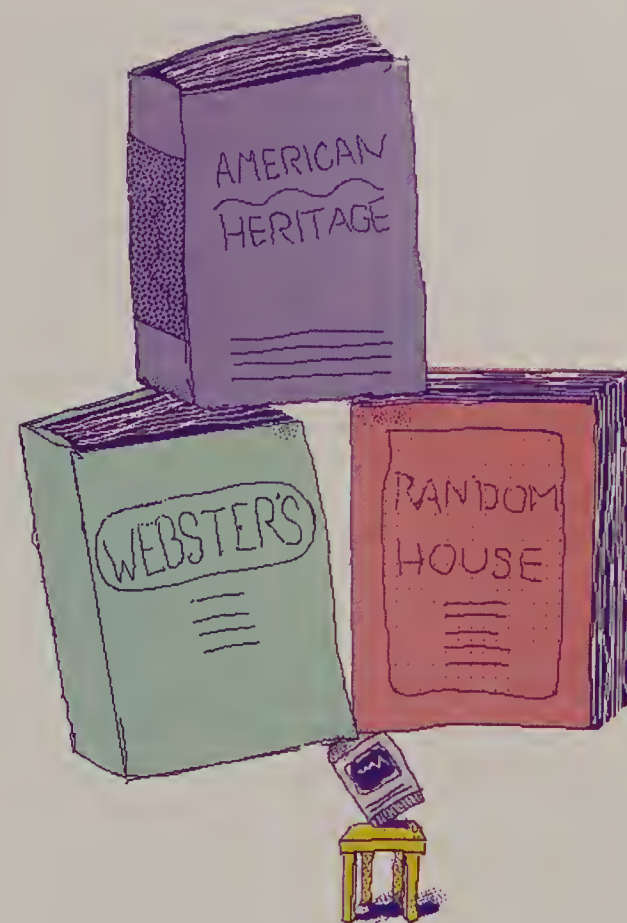
Modular Dictionaries

The dictionaries are what attract attention. Users can choose which ones to install according to space limitations and needs. The most conservative choice is an 83,000-word list that is the same as the one previously offered with MacLightning. A new compression algorithm has reduced the amount of space needed to store the dictionary on disk by 40 percent.

The standard dictionary choice includes an additional 13,000-word list of biographical and geographical names. You can also install the accompanying medical and legal word modules. Users combining all these options will have a 154,000-word dictionary—easily the largest word list available with any Macintosh spelling checker. Yet checking your spelling with the largest dictionary is just as fast as checking it with the smallest. It may even be faster, since you answer fewer "false alarms"—words the spelling checker does not recognize even though they are spelled correctly.

Both programs also feature a hyphenation module. The user can see every word in the dictionary hyphenated or can hyphenate a selection of text. However, this module does not work correctly with many word processors, including MacWrite, and it removes all formatting from the selected text. Spelling Coach Pro also comes with a thesaurus that you can access through the menu or with command keys (see "Shades of Meaning").

Spelling Coach Pro offers one additional feature found in no other spelling checker for the Macintosh—an 80,000-word dictionary with definitions (you won't be able to access these definitions, however, without at least 1MB, and a hard disk is highly recommended). This module is separate from the spelling checker, but allows the user to select a word from the

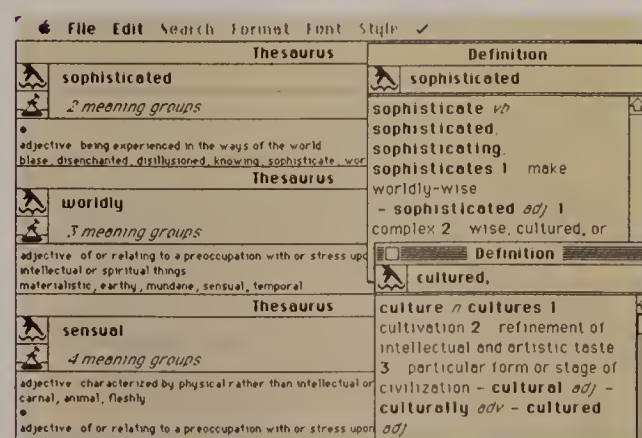


text, the dictionary, or a thesaurus window, and see a definition in another window. The definition dictionary contains definitions for only about one half of the words included in the program's other modules. Even so, this module takes up 1.3MB of disk space.

Finding the Right Combination

The user has maximum control over customizing Spelling Coach. Not only can you load any combination of dictionaries, but you can also set Spelling Coach to automatically load as a DA with any application or combination of applications. With the exception of the hyphenation module, both programs work in practically any Macintosh environment. Even under MultiFinder, the DA opens correctly when you shift to a different application. But you can't use the DA's batch mode under MultiFinder. The stand-alone Coach Speller, however, works perfectly under MultiFinder.

Spelling Coach's interactive mode (where the program beeps whenever it doesn't recognize a combination of letters you have typed) checks spelling with practically any program, including HyperCard. The batch-checking mode, however, uses some of the facilities of the word processor, so the list of programs it works with is shorter. Most major word processors are supported though (and support for PageMaker and ReadySetGo is in the works). Also, formatting is sometimes not correctly



Shades of Meaning

Spelling Coach supports multiple windows. Here a synonym was sought for a word in the text, then two more levels of synonyms were sought. The dictionary definition is also visible.

maintained in the batch-checking mode. For instance, I found a situation in which a word was respelled beginning with a lowercase letter, when the original had been capitalized.

One of my favorite features in Spelling Coach is the dictionary window, which shows all the words in the dictionary. The base list cannot be edited, and appears in plain text. User-added words appear in italics, and you can edit them. Words containing any ASCII characters (such as diacritical marks or even mathematical formulas) can be added to the dictionary.

Another nice feature is the analysis window, which gives a brief list of statistics for any document checked in the batch mode. The analysis window also lists suspect words, which you can sort to find and remove duplicates. The user can choose any portion of the remaining list to add to the dictionary, or choose the actual misspellings individually, to see them in context and correct them (see "Windows of Words").

The program offers many other handy features, including the ability to directly edit text from within the Coach Speller. This is useful for situations the spelling checker can't correct, such as removing a space accidentally typed within a word. Spelling Coach also offers some simple error-checking facilities, such as checking for capital letters at the beginning of sentences and finding double double words.

The user-definable configuration options are very complete. For instance, the user can assign command keys to the 12 menu choices. The manual is clear and concise, and contains illustrations, instruc-

tions, and tips. Deneba also offers an 800 number for technical support.

Spelling Coach is one of the very best spelling checkers. Even if your word processor has a built-in spelling checker, you may still want Spelling Coach or Spelling Coach Pro for the thesaurus, definitions dictionary, statistics, and simple grammar-checking features. While Spelling Coach is not without its rough edges, its flexibility and large dictionaries make it a true power-user's product. —*Scott Beamer*

See *Where to Buy* for contact information.

Musical Musings

Jam Session 1.0

Interactive music performance software.

Pros: Lets almost anyone sound like an accomplished, if repetitive, musician. Comes with high-quality (for the Mac) digitized sounds and a set of engaging songs covering many musical styles.

Cons: People who lack a well-developed rhythmic sense may have trouble getting good results.

Company: Broderbund Software. **List price:** Version 1.1 \$49.95. **Requires:** 512K, one 800K disk drive; two 800K drives or hard disk, and external speakers or headphones recommended.

Copy protection: Key disk; installs on hard disk.

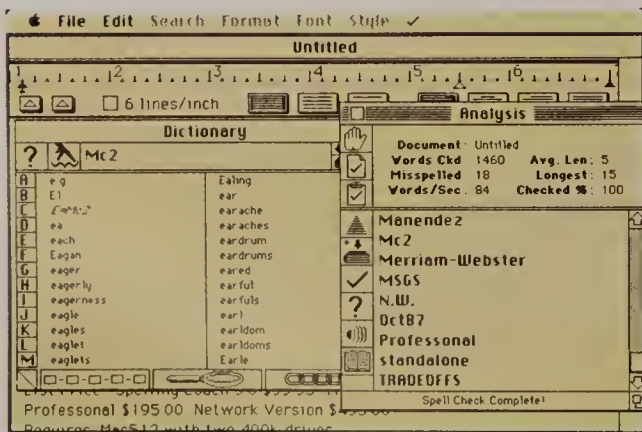
M 0.94

Interactive MIDI composition tool. Pros:

Provides a comprehensive set of powerful controls for altering nearly every element of a performance. **Cons:** People accustomed to conventional-sounding music may find M's experiments unacceptably cacophonous.

Company: Intelligent Computer Music Systems.

List price: \$150. **Requires:** 512K Mac or Mac Plus, MIDI interface, MIDI synthesizer. **Copy protection:** Key disk; installs on hard disk.



Windows of Words

The dictionary window displays the words included with the program in plain type; user-added words appear in italics. The analysis window displays document statistics as well as a list of misspelled words. The list can be alphabetized, and duplicate words can be removed. Remaining words can be added to the dictionary or corrected.

puter. However, they do so in very different ways.

Music for the Masses

Brøderbund's Jam Session is a blast, whether you're tone deaf or an accomplished musician. A backup band plays a prerecorded accompaniment, and you play a solo by pressing keys on the Mac keyboard. The 19 songs supplied with the program cover jazz, classical, rock, country, Latin, reggae, rap, and more. And these aren't just repeating patterns, they're fully realized compositions with reasonably interesting chord changes and arrangements. As the music plays, animated musicians perform on screen in an appropriate environment.

The screens are cute, but more important, Jam Session sounds good. All the sounds are digital samples recorded from actual instruments, and even the piano and the heavy-metal power chords sound a lot like the real thing. Of course, the Mac isn't renowned for high-quality audio—while a stereo hookup does wonders for the sound, you still hear a lot of digital noise and distortion (Jam Session does not support MIDI).

Being able to step out as the soloist makes Jam Session really fun. Each alphanumeric key plays a single note or a riff, a short passage, on a particular instrument, and produces an enthusiastic wiggle from the corresponding member of the screen band. Notes are assigned to keys in advance, so that whatever key you press, you'll always (well, almost always) be in harmony with the backup band.

Despite the fact that all the riffs are prerecorded, soloing with Jam Session sounds remarkably lifelike and unmechanical. For starters, most riffs have enough complexity and stylistic authenticity to sound like real music (the Carlos Santana imitations on the Latin rock tune, for example). And there are enough riffs to build a varied performance. The Mac keyboard is usually divided between two or more instruments, each with its own riffs. Many keys are assigned several alternative riffs, with Jam Session automatically playing the one that fits the harmony at that point in the song. Pressing the Shift key accesses another complete set of riffs.

Most often, the solo instruments are guitar, keyboards, and drums; but depending on the song you might play country fiddle, classical flute, or Jamaican steel drums. There are also sound effects to fool with: power zaps on the heavy-metal songs,



So you wanted to be a rock 'n' roll star, but somehow you got stuck behind a desk pushing papers. A pair of Mac programs—Jam Session and M—may not change all that, but they stand ready to help liberate your personal muse. Like other interactive performance entries (see "Getting Started with Music," *Macworld*, November 1987), both programs let you blend your own music with input from the com-



clucking chickens on the country tunes, even a digitized voice for rapping. You can change the instrument assigned to a riff, or edit the riff's notes.

Even though you can't play any really wrong notes (unless you add them by editing a riff), it still takes a bit of concentration to create a truly satisfying performance with Jam Session. Some sequences of riffs sound a lot better than others, and you have to experiment to find which combinations work best. Also, you need a decent sense of rhythm to get the most from the program. Normally, Jam Session starts a riff as soon as you press the key, whether or not you come in on the beat. There's a menu command that forces riffs to start at the beginning of a measure, but since most of the riffs last only one or two beats, you'll hear unmusical pauses if you use it.

Dial M for Music

Where Jam Session lets you create conventional-sounding music even if you can't play a note, Intelligent Computer Music Systems' M goes out of its way to help musicians bend and break the rules. It's a musical house of mirrors that's not for the timid, but it can still be great fun.

The basics are simple. Using a MIDI keyboard or a screen keyboard graphic, you specify a series of notes (and rhythms, if you like) for the program to work with. M takes that raw material and generates a performance, but the performance is likely to sound very different from your original notes. The reason? The program can randomly vary a host of important musical elements during the performance, including the fundamentals of note order and rhythm. You have control over how ran-

dom M gets, but you can also take direct control of the variations yourself.

This fundamental idea quickly becomes extremely complex, because there are so many elements to vary, and M lets you change any combination of them as you are playing your music. The complications start with the notes themselves. Four separate voices (note patterns) can play at a time, but you can record six different songs, each with four patterns. For each pattern three rules govern the order in which notes play (in the same order in which they were recorded, in a completely random order, or in an initially random but then repeating order), and you can choose one method for all four voices or mix the rules in any combination.

Among the other musical variables subject to control or randomization are the volume range (MIDI velocity), the duration of each note, the tempo of each pattern, and the tempo of the overall performance. Besides controlling any of these variables individually during playback, you can also "conduct" any combination en masse by moving the mouse across a screen grid.

As you might guess, this double-barreled randomness can easily lead to cacophony. But if you choose your starting notes judiciously, M can take you down some delightful musical corridors you might never have otherwise discovered.

M supports the MIDI file standard, so it can share performance files with standard sequencing software such as Passport Design's Master Tracks Pro and Opcode System's Sequencer 2.5. M's liberating unruliness makes it an excellent complement to such conventional MIDI software staples. —Steve Cummings

See *Where to Buy* for contact information.



Music Control

M's main screen is very busy, but the multitude of controls make sense after a little work with the program. The grid with the band holding the baton in the upper left-hand corner is the conductor; a mouse cursor that lets you vary many aspects of a musical performance while the composition is playing.

They Can't Hurt

This review looks at surge suppressors. The accompanying table compares features and gives companies and prices.



You see ads for surge suppression equipment, liberally sprinkled with lightning bolts and paranoia-inspiring admonitions to "protect your valuable investment," scattered throughout computer publications. Before discussing what these surge suppressors can do for a Macintosh user, let's pinpoint what they *can't* do.

Surge suppressors can't protect against brownouts, power failures (no matter how brief), or voltage drops caused by faulty or inadequate wiring (the sort of condition that causes your lights to dim when the air conditioner turns on). They also won't compensate for the frequency drift you might get if your power source is a portable generator. To counteract these conditions you need a bulkier and much more expensive piece of equipment—an uninterruptible power supply.

However, surge suppressors do protect against some less-visible power problems. Most filter out electromagnetic noise, which can be caused by nearby radio transmitters, cheap light dimmers, poorly filtered computer equipment, or worn electric motors; they can protect against transient voltage spikes caused by nearby

or distant lightning striking power lines; and they can absorb the voltage surges that result from switching on large motors or from problems with your electric company's power grid.

Since surge suppressors cost about as much as a new game or utility software, and since the Macintosh itself is largely immune to the conditions that surge suppressors protect against, you might well question the need for one. Still, as you acquire new peripherals you have a need for more outlets and some form of central power control, and surge suppression usually costs only a few dollars more than the equivalent bare outlet box. Furthermore, your peripherals might not have the same immunity to surge conditions that the Macintosh has. There are situations, though they're rare, when power problems are a very real concern and surge suppressors can prevent loss of data or even hardware damage. Like eating chicken soup for a cold, surge suppressors are inexpensive, might contribute to your peace of mind, and can't possibly hurt.

Which One for You?

Your choice of a suppressor will probably be dictated by factors other than performance, such as number and location of outlets and switches, cord length, power-on indicators, and styling. The 11 units I evaluated ranged from the Maccessories Surge Suppressor, which simply replaces the Macintosh power cord, to the Electra Guard 20, which provides six electrical outlets. The units also varied from under-the-



desk designs (the familiar power strip) to those, like the Relax Technology units, that are styled for desktop use. The Relax models are flat (1½ inches high) and fit under a one-piece Macintosh or under the monitor of a Mac II. Besides the Maccessories Surge Suppressor, Kensington also offers a desktop model, the Maccessories Control Center, and the System Saver Mac, a combination power center and fan that fits in the handle of the Macintosh 512K and the Plus. (All units have three-prong plugs and sockets; proper grounding is imperative in a surge suppressor.)

If you know you have power problems, or if you have critical data or other reasons for being unusually concerned about spikes and surges, you should look into Sutton Designs' ZX-5000/4. A pricey and very rugged basic suppressor, the ZX-5000/4 has some impressive specifications. The manufacturer includes a detailed description of its test setup and results with the unit.

Surge Suppressors Compared

Device	Manufacturer	Outlets	Switched Outlets	Lights ¹	Max. Load (in watts)	List Price	Notes
Electra Guard 3+	CPS	1	0	S	1875	\$17.95	Single adapter-style plug
Electra Guard 5	CPS	6	0	P, S	1875	\$39.95	Indicator detects improper grounding; uses both plugs of standard duplex outlet
Electra Guard 20	CPS	6	0 ²	S	1875	\$119.95	
Maccessories Surge Suppressor	Kensington	1	0	0	525	\$49.95	Replaces power cord
Maccessories Control Center	Kensington	4	3 ²	3, P	960	\$99.95	Replaces power cord; for desktop use
System Saver Mac	Kensington	3	1 ²	P	1080	\$99.95	Replaces power cord; fits in handle; fan
Power Control 2	Relax	4	3 ²	P	1200	\$69.95	For desktop use
Mini Power Control	Relax	5	4 ²	4, P	1200	\$79.95	Fits under 512K, Plus, SE
Power Control 3	Relax	4	3 ²	3, P	1200	\$89.95	For desktop use
Power Control 4	Relax	6	5 ²	5, P	1200	\$99.95	For desktop use
ZX-5000/4	Sutton Designs	4	0 ²	P, S	1875	\$119.00	

¹ Number of sockets with indicator lights. P means unit has master power-on light, S means unit has indicator that shows whether suppression circuitry is in working order (an important consideration, since the active devices in most suppressors have a limited lifespan).

² Has a master switch that controls all outlets at once.

The tests I performed were informal, designed to check only basic responses to electromagnetic noise, transient spikes, and voltage surges. I made no attempt to verify manufacturers' claimed ratings or to find the point at which the suppressor (or the Macintosh) would be damaged. The units passed these simple tests.

Under ordinary conditions, you're unlikely to need a surge suppressor. The Mac handles everyday power problems with ease, and during such extreme conditions as nearby electrical storms I would unplug my equipment whether or not I had a suppressor. If local conditions did compel me to get a surge suppressor, I wouldn't settle for anything less than the Sutton. On the other hand, owning even the simplest Macintosh configuration usually leads to a shortage of electrical outlets. If this is the case, then you might as well spend a bit more and get a surge suppressor with several outlets instead of a basic outlet box. Besides, you'll appreciate being able to turn on your equipment without groping around the back of the Mac and its peripherals or crawling around under your desk. —Ron Risley

See *Where to Buy* for contact information.

The Best of Both Worlds

Mac286

MS-DOS coprocessor. **Pros:** Runs all MS-DOS software; easy to install; many options for disk setup; supports the LaserWriter for MS-DOS applications; optional 80287 math coprocessor chip.

Cons: Expensive; requires additional purchase of 5¼-inch drive; uses 640K of RAM; screen refresh and mouse software are very slow.

Company: AST Research. **List price:** \$1499.

Requires: Mac II; 5¼-inch external floppy drive.



AST's Mac286 coprocessor board lets you run popular MS-DOS programs like 1-2-3 and dBase III on a Mac II. It's supplied with everything you need except an Apple (or Dayna Communications) 5¼-inch external drive or an IBM 3½-inch drive. The drive plugs into a connector on the Mac286 and works like an MS-DOS drive A: or drive B:. A partition in the Mac's hard disk becomes the MS-DOS drive C: and behaves just like a hard disk in an IBM PC AT. The rest of the hard disk, or a

Mac 3½-inch drive, or networked volumes mounted via AppleShare or TOPS, can be used as drive D: for storing DOS applications and data files. These disk facilities provide a great deal of flexibility for sharing data between DOS and Mac applications.

Installation takes only about half an hour, thanks to detailed step-by-step instructions. The Mac286 hardware consists of two interconnected boards that slip into the Mac II's NuBus slots. You install the software from the Finder, and then define the size and location of the hard disk partition that will hold MS-DOS and your applications (I chose to use 10 megabytes out of my 40MB). After installation, you launch the Mac286 icon, and within seconds you see MS-DOS prompts on the Mac screen. Then you can install MS-DOS applications.

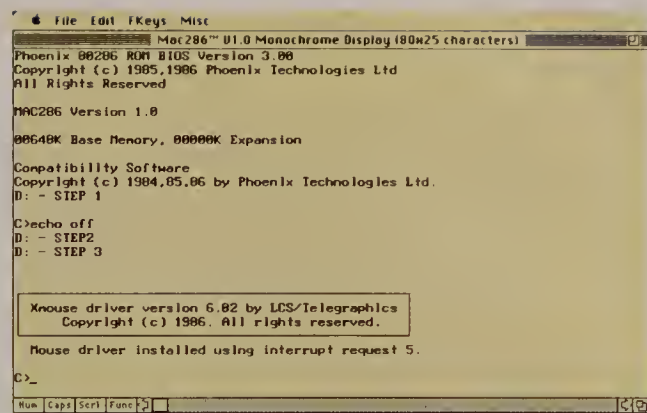
Although the Mac286 has 1MB of RAM for DOS and applications to reside in, it uses an additional 640K of the Mac's RAM. Since my Mac II has 8MB, the memory requirements were not a problem. But if your Mac has only 2MB, you may want to add more memory. For instance, when I ran MultiFinder, MS-DOS, 1-2-3, Excel, and Word, my system grew to 1400K.

The Mac286 has a built-in capability for supporting the LaserWriter, so MS-DOS programs that use PostScript can produce high-quality output. For non-PostScript applications an Epson FX-80 emulator is provided, allowing printing on either the LaserWriter or ImageWriter. In MS-DOS mode, the LPT1 printer port gives you access to the Mac's Chooser and to the selected printer. Additionally, the Mac's serial ports (printer port and modem port) function interchangeably as COM1 or COM2 for other devices, such as modems. You configure the port addresses via a Mac menu.

The Mouse That Crawled

When you're running DOS, the Mac's mouse has full access to the Mac286 menu bar, the Apple menu, the Control Panel, and all desk accessories. When you're working in a DOS application that supports the Microsoft Mouse, AST provides an MS-DOS Mouse Mode that you can turn on and off from the menu bar. Unfortunately, in this mode the mouse is too slow to be usable.

The Mac286 emulates only IBM's Monochrome Display Adapter (MDA) or Color Graphics Adapter (CGA), or the Hercules Graphics Card. Since none of these emulations offer the resolution or color choice available on the Mac II, you can't get



Starting Up DOS

To access the MS-DOS prompt while using the Mac286 coprocessor, simply launch the Mac286 icon and wait for the memory check and mouse driver installation. You can then issue standard DOS commands or run DOS applications.

Mac screen quality from the Mac286. To make matters worse, screen refresh is so slow that you see a ripple when scrolling. In CGA emulation mode, refresh becomes even slower—almost painfully so.

How fast is the Mac286? Its 80286 chip runs at 8 MHz, which should be equivalent to the speed of an IBM PC AT. You can add an 80287 math coprocessor chip to speed up certain mathematical operations. But, how does it work when you use an application?

In my timing tests (which used a 1-2-3 spreadsheet), I found that the IBM PC AT's screen-refresh rate was about 3.8 percent faster than that of a Mac II with the Mac286 board. Both computers were running in CGA mode. This test confirms comments from AT users that the AT is a little faster than the Mac286 in screen-refresh-intensive operations such as recalculating a spreadsheet or redrawing a page layout.

Who's It For?

Including the 5¼-inch drive, the Mac286 coprocessor package costs about as much as a fully equipped AT clone. Is it worth it? If you have enough desk space for two computers and don't mind using two machines, then you should probably buy an inexpensive AT clone. However, if you have limited desk space but still need to switch back and forth quickly between the Mac and IBM worlds, then the Mac286 is an appropriate solution. The Mac286 will also satisfy those who want to use the Macintosh for certain applications, but at the same time must work in a corporation that has invested in DOS software.

—David Peltz

See *Where to Buy* for contact information.

Satisfaction Guaranteed Or Your Money Back!

Advanced Macro Capabilities

Tempo II

The next step in Macintosh automation.



Tempo II

From Affinity Microsystems

Take a break from repetitive computing chores and let Tempo macros speed your work dramatically — in almost any application.

Simply record any combination of keystroke and mouse movements as you do them, replay the macro, and watch your Mac fly solo! "Autopaste" boilerplate text and graphics, move between applications, format lengthy documents, time-delay modem transmissions — with only one Command keystroke.

Smart features in Tempo II give you the most advanced macro capabilities available for the Mac. "Smart" Menu selections and Dialog-Box commands remember your selections by name, not position, so macros play back properly even if documents and menus are moved or changed. Other major enhancements include Tempo II's ability to record "Universal" macros in one application that will play in other applications, and to replay a macro by simply typing its name — great time-savers!

You don't have time to waste — order Tempo today.

2119 • Works w/512K, Mac Plus, SE & II; 800K drive recommended
\$109

FREE

New
Spring
Catalog

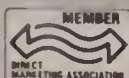
Your Resource for Select Macintosh Products

Put your Mac on autopilot with Tempo II. New "Smart Controls" do more than ever to help you automate tedious computing tasks.

You want it? We've got it! All the latest software, hardware, and accessories are in stock and ready to go. And ordering from Icon Review is not only easier and faster than ever, it's now risk free. Try any non-copyrighted product for 30 days. If you are not 100% satisfied, return it for a prompt refund or exchange. (Due to software

copyright laws, software is returnable within 30 days only if unopened or defective.)

You can count on Icon Review to deliver the most up-to-date Macintosh software, hardware, and accessories at the lowest possible prices, so why pay more? Pick up the phone and order today. You'll be glad you did!



Icon Review

800/228-8910

Good anywhere in U.S.

408/625-0465

SOFTWARE

Adobe Fonts	\$Call
<i>We carry all of the most popular styles at the most competitive prices!</i>	
Adobe Illustrator	\$399
AffiniFile	SPECIAL \$ 54
Analyze!	NEW \$ 84
Business Class	\$ 32
Business Sense	\$309
CalendarMaker	\$ 32
Canvas	SPECIAL \$109
• Canvas DA	\$ 59
C.A.T	\$239
Certificate Maker	\$ 35
CheckMark Payroll	\$199
Coach 3.0	\$ 59
• Coach Professional	\$109
• Coach Prof. Network	\$299
• Coach Thesaurus	\$ 36
Colorizer	NEW \$ 39
Comment	\$ 59
Copy II Mac	\$ 22
Cricket Draw	SPECIAL \$169
Cricket Graph	\$119
Curator	SPECIAL \$ 79
dBase Mac	SPECIAL \$309
DeskPaint	NEW \$ 39
Disk Express	\$ 30
DiskFit	\$ 65
• Network DiskFit	\$279
Double Helix II	\$429
• Multi-User Helix Kit	\$Call
Eureka	\$129
Executive Life	SPECIAL \$ 54
Expressionist	\$ 52
FactFinder	\$ 39
Fastback for Mac	\$ 59
Fast Forms	SPECIAL \$ 99
FileMaker Plus 2.0	\$195
Findswell	SPECIAL \$ 32
Focal Point	NEW \$ 65
Font/DA Juggler Plus	NEW \$ 45
Front Desk 6.0 (per user)	NEW \$ 79
FullPaint	\$ 49
GridMaker	\$ 42
Hard Disk Partition	\$ 39
HyperDA	NEW \$ 42
ImageStudio	SPECIAL \$299
In-House Accountant	\$ 99
Insight OneWrite	NEW \$199
LaserFX	\$135
LaserServe (per user)	\$ 64
Lookup	\$ 32
MacAtlas	\$125
MacCalc	\$ 82
MacDraft 1.2b	\$155
MacGraphics	\$149
MacInTax Federal	\$ 89
• MacInTax California	\$ 49
• TaxView Planner	\$ 59
MacInUse	\$ 55
MacLabeler	\$ 28
MacMoney 3.0	\$ 74
MacMovies	\$ 79
MacProof 3.0	\$124
MacSQZ	\$ 62
Mac Zap	\$ 39
MapMaker 3.0	\$199
McMax	SPECIAL \$185
MergeWrite	\$ 35
Micro Planner	\$319
• Micro Planner Multi-User	\$399
Microsoft	
<i>All Microsoft products on sale — Call for prices!</i>	
Modern Artist	NEW \$175
MORE 1.1c	SPECIAL \$175

Multi-User Appt. Diary	\$ 89
Notes...	\$ 42
<i>We carry Notes... for Word 3.0, PageMaker 2.0, Works, Excel, & Ready, Set, Go! 4.0.</i>	
Omni Backup	\$ 69
101 Macros for Excel	\$ 55
OverVUE 2.0	\$149
• Mail Manager	\$ 29
• Personal Finance	\$ 29
Pict-O-Graph	\$105
PixelPaint	SPECIAL \$299
Power Op	\$ 49
PowerPoint	\$279
Power Station	\$ 39
QuickDEX	\$ 44
QuickKeys	\$ 77
Qume Fonts	\$Call
<i>Call for complete list of fonts & lowest prices</i>	

Ragtime II	\$259
RAM Snap	\$ 20
Read-It! 300	SPECIAL \$199
• Read-It! ThunderScan	\$129
ReadySetGo! 4.0	SPECIAL \$299
Record Holder Plus	\$ 45
Reflex Plus	\$179
Resumé Writer	\$ 28
• Professional Version	\$ 75
Scoop	\$Call
Sentinel	\$185
SideKick 2.0	\$ 59
Silicon Press	\$ 48
Space Edit	\$499
Spelling Champion	\$ 35
Spellswell	\$ 49
• Legal Dictionary	\$ 56
• Medical Dictionary	\$ 56
Stepping Out	\$ 55
Suitcase	\$ 36
SuperGlue	\$ 54
Super LaserSpool	\$ 99
• Super LaserSpoolMulti-user	\$259
Super Paint	\$ 89
SuperSpool	\$ 49
Tempo II	\$109
• Tempo 1.2	\$ 53
Thunder 1.1	\$ 34
TopDesk	\$ 35
Trapeze	\$Call
Turbo Pascal	\$ 64
• Database Toolbox	\$ 64
• Numeric Toolbox	\$ 64
• Turbo Pascal Tutor	\$ 49
VideoWorks II	SPECIAL \$118
• HyperCard Driver	NEW \$Call
V.I.P.	\$ 99
VLS Bulk Mailer	\$159
WetPaint	\$ 44
WillMaker	\$ 30
Word Finder	\$ 37
Word Perfect/Mac	\$249
Write Now	\$109

COMMUNICATIONS

ComServe	\$124
Courier Modems	
• 1200 Modem	\$219
• 2400 Modem	\$419
• 9600 Modem	\$849
Direct 1200 Modem	\$119
EMAC 2400 Modem	\$239
Hayes	
• Smartcom II	\$ 89
• SmartModem 1200	\$299
• SmartModem 2400	\$449
• SmartModem bundle	\$359
InBox Starter Kit 2.2	\$239
• Personal Connection	\$ 85

inTalk	\$Call
MacEnhancer	SPECIAL \$ 159
MacLink Plus w/cable	\$ 149
MacServe (per server)	\$ 164
Microphone II	\$Call
• Microphone 1.1	\$ 119
Modular Cable Kit	\$ 99
NetBridge	\$ 349
NetModem V1200	\$ 369
NetModem V2400	\$ 489
NetSerial	\$ 349
PhoneFlex	\$ 139
PhoneNet — Networking Products	
• For 128 & 512K/E	\$ 45
• For Plus, SE & II	\$ 45
• AppleTalk Adapter	\$ 8
Pocket Modem	\$ 169
Practical Modem 2400	\$ 199
Red Ryder	\$ 59
TOPS for Macintosh	NEW \$ 155
• TOPS for PC/board	\$ 199
• TOPS for PC /software	\$ 155

HARDWARE

A+ Mouse	\$ 79
• A+ Mouse ADB	\$ 89
AST TurboScan Flatbed	\$1599
CanonCopiers — Call for low prices	
Datacopy Scanner	\$1499
• Document Feeder	\$ 459
• Software/Interface	\$ 599
Grappler	NEW \$ 89
• Grappler LQ	NEW \$ 99
Kurta Graphics Tablets	
• IS/One (12x12)	\$ 499
• IS/One Penmouse (6x9)	\$ 199
Mac 101 Keyboards	EACH \$ 149
MacScan Flatbed	NEW \$1825
MacScan Sheetfed	NEW \$1299
MacVision	\$ 179
MinuteMan Power Supplies	
• MinuteMan 250	\$ 289
• MinuteMan 300SS	\$ 439
• MinuteMan 600SS	\$ 739
Neos Mouse	\$ 49
ProPopoint Trackball	NEW \$ 119
QMS Laser Printer	NEW \$4999
quadLYNX Trackball	\$ 99
Qume Laser Printer	\$4295
Seikosha Printer	\$ 229
ThunderScan 4.0	\$ 225
Turbo Mouse	\$ 83

BOARDS & MONITORS

Call for BEST selection and lowest prices!

DISK DRIVES

We offer drives by CMS, PCPC, NuData & Everex. Call for prices.

ACCESSORIES

Icon Review offers the largest selection of accessory products at low discount prices. Get your FREE catalog or call toll-free for your favorite products.

**FREE Catalog**

Order yours today and save money on more than 500 Mac products.

Call
800/228-8910

**Orders**

800/228-8910

Good anywhere in U.S.

Monday thru Friday 6 am to 6 pm
Saturdays & Sundays 8 am to 4 pm (Pacific Time)

408/625-0465

SATISFACTION GUARANTEED or YOUR MONEY BACK: Try any non-copyrighted product risk free for 30 days. If, for any reason, you are not 100% satisfied, return it for a prompt refund or exchange — no restocking fee, no hassles. Software is returnable within 30 days only if unopened or defective. All products shipped by Icon Review are new and guaranteed by the manufacturer to work. Most of our products are also backed by extended manufacturer warranties.

FREE TECHNICAL SUPPORT: Need more information? Icon Review maintains a technical support team for your convenience. Call (408) 625-0465 if you need help — before or after ordering.

POLICIES: We accept MasterCard and VISA with no added service charge. We will **not** charge your card until your order is shipped. Personal and company checks accepted; for faster delivery, send certified check, cashier's check, or money order. CODs accepted; please call for details.

• California residents, please add 6% sales tax to your order.

• We accept Purchase Orders from qualified corporations, universities, and volume purchasers. Please call 800/228-8910 and ask one of our National Account Executives how you can profit from our National Accounts Program.

CHANGES & CANCELLATIONS: You may change or cancel your order at any time prior to shipment. In-stock items are shipped within 24 hours; priority orders are shipped the same day if received before 2 pm PST.

RETURNS: All returns require a Returned Merchandise Authorization Number (RMA). Phone Customer Service at 800/228-8910 to receive your RMA. All returns must be complete, including all original warranties, manuals, documentation, and packaging. Please include a copy of your invoice or packing slip and a description of the problem. Remember, no returns authorized after 30 days from date of shipment, and all returns must be complete and include your RMA.

SHIPPING & HANDLING: We ship all in-stock items within 24 hours of receiving your order. Our standard service is UPS Second-Day Air. Need it tomorrow? Request UPS Overnight Service. International Service also available; call for details.

A shipping and handling charge (calculated by weight) will be added to your order.

Order from this ad through May 20, 1988. All prices, specifications, and availability subject to change without notice.

Macintosh is a trademark licensed to Apple Computer.
Icon Review, 9570 Mid Valley Center, Carmel, CA 95006
© 1988 Icon Review

We created WordPerfect no time flat. Relatively.



We don't mind telling you that we're breathing a collective sigh of relief. After slaving away, we've done it. We've de-

signed and manufactured a powerful word processor that's truly worthy of the Macintosh.

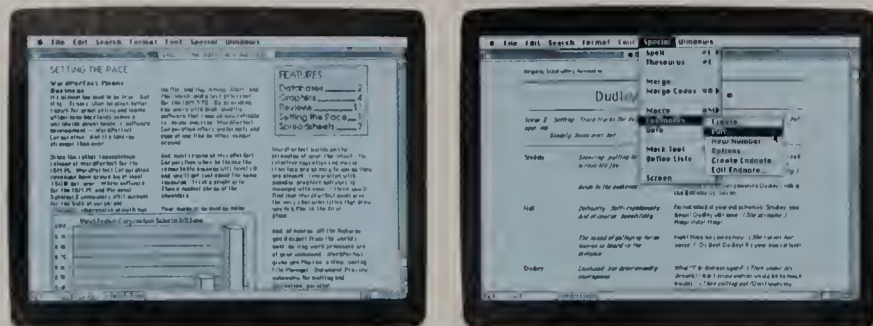
WordPerfect® for the

Macintosh is designed to take advantage of the Mac's outstanding graphics capabilities. And its mouse interface is elegant

and easy to use; WordPerfect's unique hierarchical menus present commands in a logical, accessible manner.

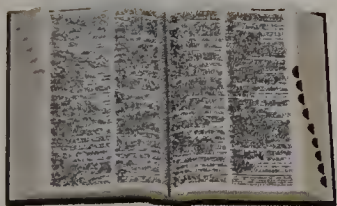
And WordPerfect for the Macintosh comes from a company dedicated to word processing. With proven features that have helped to make WordPerfect the best-selling word processing software in the world.

Those features include



(Left) WordPerfect offers parallel or newspaper-style column layouts. (Right) The interface is specially designed to be a familiar visual experience for Mac users.

for the Macintosh in



WordPerfect for the Macintosh offers extensive, fully integrated dictionary and thesaurus.

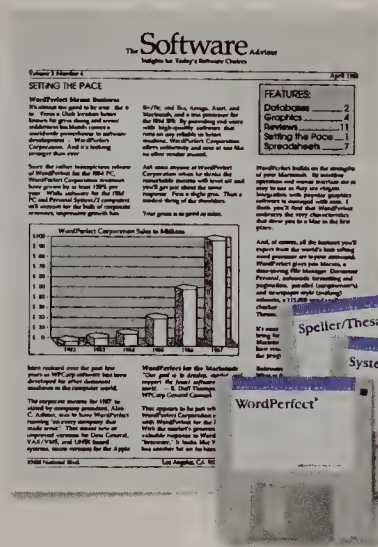
parallel and newspaper-style (snaking) column options displayed on screen;

automatic formatting and pagination; and a file manager that lets you copy, delete, rename, or print a file right from one WordPerfect dialogue — or

quickly scan and select files by employing "Word Search."

And, of course, WordPerfect for the Macintosh offers macro options as only WordPerfect can — helping to make repetitive tasks a thing of the past. Everything from memo forms to newsletter formats to complex procedures can be stored via macros with no limit as to number or size.

WordPerfect for the Mac also helps you compile professionally organized tables of contents, indexes, and outlines. It makes footnoting simple. And, using Print Preview, it lets you view your document in miniature so you can check its appearance before printing. Add to all of this a fully integrated, 115,000 word dictionary and a large, rapid-access thesaurus, and you've got the perfect tool for all of your word processing needs.



Inserting graphics into your work is as easy as retrieving a file. And fonts and pictures are displayed on screen.

WordPerfect for the Macintosh is designed for the individual, or for use in a shared environment. It's compatible with files derived from WordPerfect 4.2 for the PC, Microsoft

Word 3.01 and MacWrite.

Now you know what's gone into our word processor for the Mac. And maybe now you'll forgive us for the short delay. Well, relatively short.

For more information, call or write WordPerfect Corporation, 1555 North Technology Way, Orem, Utah 84057 (801)225-5000.

(In Canada, call 1-800-267-2499.)



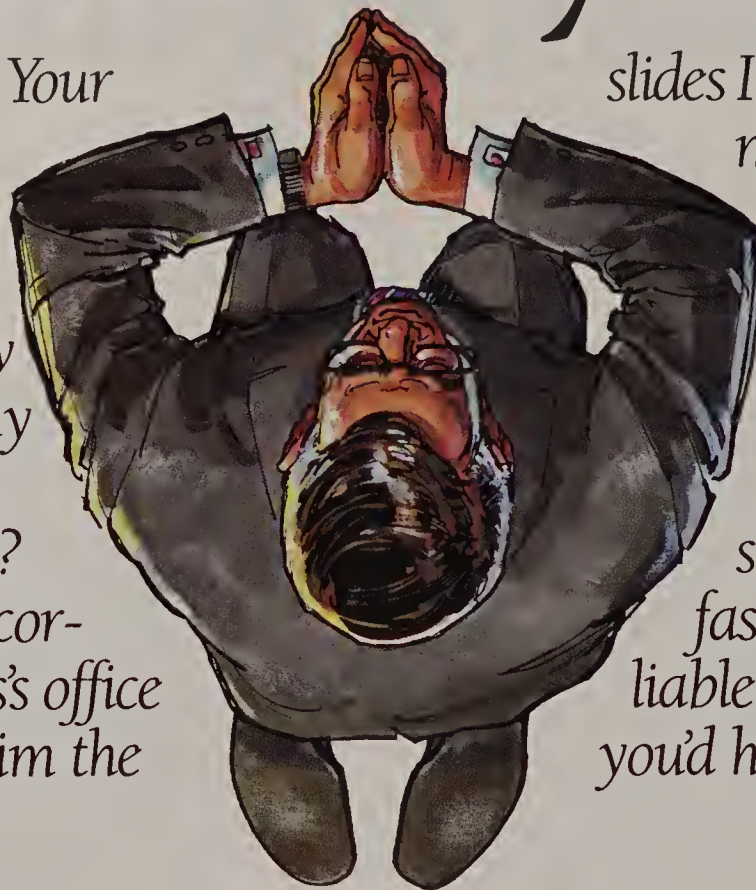
WordPerfect® for the Macintosh

Circle 126 on reader service card

The Prayer.

"Hear me, Lord. Your concept of eternity? Down here it takes on new meaning. I've waited four days now and still don't have my slides.

"Valley of death? Know it well. It's the corridor outside my boss's office where I wait to tell him the



slides I don't have for tomorrow morning's presentation will cost us \$150 apiece—thanks to the slide pharaoh's 'rush' charges.

"If you could inspire someone to invent a faster, cheaper, more reliable way to get great slides, you'd have a lot of converts."

The Answer.

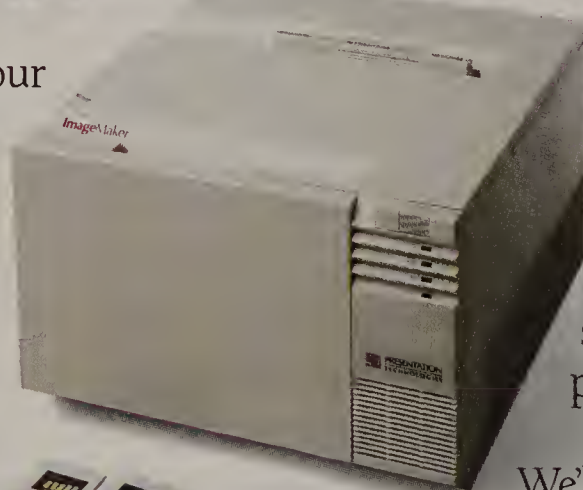
Rather than risk meeting your maker to make a meeting, meet ImageMaker.™

It lets you create better-than-service-bureau slide images in minutes. In 16 colors. For cents instead of dollars.

And with almost miraculous ease.

Plug it into your Mac®, IBM® or compatible computer, and ImageMaker quickly transforms rough ideas into crisp, 8000-line resolution slides.

That's heaven-sent clarity. And the colors



ImageMaker costs no more than a typical Carousel® of service-bureau-made slides.

are dazzling. Text looks terrific, and graphics like pie charts no longer look half-baked.

Now, instead of sweating out the wait for costly slides from outside, you can relax with a picture-perfect rehearsal.

So get your prayers answered. We'll send you the free ImageMaker facts kit with sample slides. Ask about the remarkable ImageMaker demonstration, and our free dealer seminars.

ImageMaker.™ Its name is its promise.

Carousel is a registered trademark of Eastman Kodak Company. Mac is a registered trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation.

800-345-9242, ext. 355. In California, (714) 545-2774.



PRESENTATION
TECHNOLOGIES

743 N. Pastoria, Sunnyvale, CA 94086 • (408) 749-1959

Circle 434 on reader service card

New Products

*Information on the Mac's latest software,
hardware, and accessories*

Edited by Eileen Drapiza

This section covers Macintosh products formally announced but not yet evaluated by *Macworld*. All prices are suggested retail. Please call vendors for information on availability.

SOFTWARE

Adobe Illustrator Collector's Edition and Type Library Publishing Packs Edition I contains a medium-weight serif and sans serif typeface for creating logotypes, 100 borders, and more than 300 dingbats. Publishing Packs consist of typefaces that address specific business applications. Edition I \$125, Publishing Pack I: Newsletters \$395. Adobe Systems, 415/961-4400.

Alphabet Blocks Children's program teaches phonics and letter names. Includes parent/teacher manual and a Magic Touch Alphabet Book with textured letters. No reading skills required. 1MB min. memory. \$49.95. Bright Star Technology, 206/451-3697.

Business Letters to Go and 50 Classic Business Contracts Collection of 175 fill-in-the-blanks business letters, with online letter writing guide and commonly used contracts. \$49.95 each. Aardvark Software, 713/872-8085.

CADmover CAD/CAM file translation program that reads, translates, and writes graphic file formats including DXF, IGES, PICT, MiniCad (2-D and 3-D), MacDraw, and MSC/pal formats. 512K min. memory. \$495. CompServCo, 800/272-5533, 504/649-0484 in Louisiana.

Command Typographer Desktop typography package with user-definable kerning, automatic hyphenation and justification, online help. Outputs to PostScript devices. 1MB min. memory. \$495. The Software Shop, 516/785-4422.

CommCenter Provides a central directory of clients and contacts, electronic mail for in-office communications, telephone messages and contact logs for external communications tracking, automated dialing via modem, and a mail merge file generator that supports Microsoft Word and Document Modeler. Package includes a 4th Dimension run-time disk. \$189. Generation Four, 505/765-9666.

Complete Credit Checker and Nationwide SS#-Locate Checker provides access to the major credit networks; SS#-Locate reports names, age, and current and former addresses linked with this number. Solutions, 800/255-6643, 513/891-6145 in Ohio.

Computerized Atlas 3-D projection of the world. Contains facts such as population, square mileage, and monetary units for more than 2500 cities. \$49.95. 128K min. memory. Software Concepts, 203/357-0522.

Construction Estimating Plus Excel template designed for builders, remodelers, or subcontractors. Includes data control, estimates, check register. 512K min. memory. \$149. Lakeland Construction Software, 612/447-4750.

Contact Provides terminal emulation and data transfer between Macs and Unisys (Burroughs) mainframes. Emulates Unisys TD, ET, MT, and T27 terminals with concurrent multiple sessions and terminal pages; also, DEC VT100 and TTY. MultiFinder and Switcher compatible. \$395. Avenue Software, 418/682-3088.

Copyrights, Trademarks, & Patents

Stackware contains complete government guidelines, rules, and regulations for obtaining registered copyrights, trademarks, and patents. 1MB min. memory; hard disk recommended. \$49.95. Aardvark Software, 713/872-8085.

Cost/Schedule Workshop Helps plan, monitor, control, and estimate project costs and schedules. Forecasted Estimate at Completion \$299, Performance Measurement Data Analysis \$995. Leckie Associates, 603/424-7014.

Digital Darkroom Automatically traces bit-mapped images and converts them into objects. Imports/exports files in PICT, PICT-2, TIFF, MacPaint, SuperPaint, and Thunderscan formats; exports to EPS or Adobe Illustrator format. \$295. Silicon Beach Software, 619/695-6956.

DiskFinder Desk accessory file finder and disk cataloger. \$49.95. Williams and Macias, 800/752-4400, 509/458-6312 in Washington.

Dreams Integrated set of design tools. Includes drafting palette, accessory palette, dimension palette, and optional architectural symbol libraries. Full Mac II color support, keyboard entry, zoom up to 32X, advanced text handling, PostScript compatibility. Layers limited only by memory. \$500. Innovative Data Design, 415/680-6818.

DS Backup+ Hard disk backup utility. Features include interrupt and resume, timer for automatic backup, ability to back up or restore multiple drives, and ability to detect and avoid bad tracks on the destination disk. \$69.95. Electronic Arts, 415/571-7171.

(continues)

“We’ll
take it
back”

—Réal Provencher

Please
open here



We want you to be happy with your software and hardware purchases. So, we offer a return policy, unique in the industry.

"If you aren't happy with any program you buy from us, send it back, in saleable condition, and pay only our regular daily trial rates. Hardware carries a 30-day money-back guarantee. No ifs, and's or but's."

-Real

ACCOUNTING

Checkmark Payroll	209.00
General Accounting	55.00
In Sight OneWrite	199.00
In Sight (GL/AR/AP)*	Call!
In-House Accountant	99.00
MacInTax '87	63.00
MacInTax Planner	47.00
Rags to Riches	
GL, AR or AP	120.00
GL/AP/AR 3-pack	299.00
Inventory or Professional Billing	239.00

*A/P, A/R available in multi-user

"We've found more and more customers who want to do business with us, because of our personnel and our style. These people know the software they want to buy. We want to offer the most attractive service, including the ability to return software that doesn't fit." *-Lew*

BUSINESS

CAT	239.00
Eureka: The Solver	129.00
Fast Forms	96.00
Focal Point	60.00
Mac Calc	81.00
Mathview Pro	149.00
Micro Planner +	299.00
Notes For Excel	42.00
Notes For MS Works	42.00
Statworks	75.00
WillMaker	30.00

COMMUNICATIONS & NETWORKING

CompuServe Starter Kit	24.00
ComServe	124.00
In Box	215.00
Laser Serve	64.00
Mac Serve	164.00
MacLink Plus	149.00
MacNet Starter Kit	36.00
Microphone 1.1	119.00

DATABASES

Double-Helix II	369.00
McMax	189.00
Omnis 3/Express	335.00
Record Holder Plus	45.00
Reflex Plus	165.00

"The reviews answer a lot of questions, but it usually boils down to one or two programs that seem like they'd do the job. Customers like knowing they can go ahead and buy what they want, and still be able to return it, and not get stuck. And, our customers know we don't charge their card, until the order's been shipped." *-Jim*

DESK ACCESSORIES & UTILITIES

Copy II Mac	23.00
Disk Express	35.00
Disk Fits	49.00
Disk Tools Plus	33.00
Disk Top	32.00
Expressionist	49.00
Fastback	59.00
HFS Backup	37.00
HFS-Locator Plus	26.00
Hyper DA	41.00
Icon-It	39.00
Mac Zap	39.00
MacTree	41.00
Power Station	38.00
QuickDEX	24.00
Quickeys	64.00
Sentinel	179.00
Sidekick 2.0	64.00
Smart Alarms	37.00
Smartsrap & the Clippers (800K)	37.00
Stepping Out	56.00
Suitcase	38.00
Super Glue	56.00
Super Laser Spool	89.00
Super Spool	49.00

"Trial purchase is a unique option, we offer. You can look at one, or several programs, to see which one best fits your application. You rent a program for a set daily fee (10-day minimum—we include 6 free days for shipping). If you decide you want to keep the program, trial fees apply toward pur-

chase. If not, just send it back. That way, you're sure. And, we even offer discounts with our Try-Pack™ specials. We want customers to be happy with their purchases, whether they're looking at a new program, or buying a second copy for use at home."

-Barbara

GRAPHICS

ClickArt Graphics (All)	29.00
Canvas	119.00
Cricket Draw	175.00
Draw It Again Sam	92.00
Cricket Graph	119.00
Graphic Works	89.00
Illustrator	399.00
Image Studio	290.00
MacDraft	159.00
My Disk Labeler (color)	32.00
PictoGraph	105.00
Picture Base	59.00
Pixel Paint	289.00
Post Art	41.00
Print Shop	39.00
Video Works II	119.00

WORD & PAGE LAYOUT

Notes For Pagemaker	42.00
Vision	119.00
Acta	36.00
Coach 3.0	62.00
Coach Professional	119.00
Coach Thesaurus	36.00
Findswell	32.00
Fluent Fonts 2.0	46.00
Fluent Laser Fonts (All)	46.00
Fontographer	242.00
FullWrite	179.00
Lookup	30.00
MergeWrite	30.00
More	161.00
Read It! (OCR)	172.00
Read It! (Thunderscan)	89.00
ReadySetGo 4.0	290.00
Spellswell	44.00
Thunder	33.00
Word Tools	47.00
Works Plus Spell	43.00
Write Now	101.00

Whether you want to buy a program, or wish to try several competing titles, you're assured of getting Software That Fits. Call us right now, and ask for our free catalog.

ACCESSORIES

High Trek (IW II) Carrying Case	50.00
High Trek (Plus) Carrying Case	59.00
High Trek (SE Ext Kybd) Carrying Case	69.00
Mac Tilt	69.00
Mouse Mover	14.95
Mouse Pads (Foam)	8.95
Mouse Pads (Leather)	11.95

DISK DRIVES

CMS Pro 45 SE	749.00
CMS Pro 60 II	779.00
CMS Pro 100SE	1495.00
CMS Pro 102 II	1195.00
CMS Pro 140 II	1695.00
CMS SD 20	579.00
CMS SD 60	879.00
CMS SD 102	1395.00
CMS SD 140	1795.00
CMS TS-60 (Tape backup)	795.00

OTHER PERIPHERALS

Minuteman 300SS UPS	489.00
Qume ScriptEN Laser Printer	3895.00
Thunderscan 4.0	199.00

COMMUNICATION HARDWARE

Smartmodem 1200	299.00
Smartmodem 2400	449.00
Anchor 1200 Modem	129.00
Anchor 2400 Modem	169.00
Phone Net Adaptor	8.00
Phone Net-512 or Mac Plus	45.00

MONITORS

LaserView 19 Monitor - Mac II	1799.00
Moniterm Viking 1 (Hi-Res)	1650.00
Moniterm Viking 10 (Color)	3695.00

Hundreds more...No surcharge on Mastercard and VISA . Purchase orders accepted on approved accounts. Sorry, no COD's or personal checks. Trial purchase based on 10-day minimum, plus six free days for shipping. All hardware sold with 30-day money-back guarantee. Prices subject to change without notice.



**SONY and KAO disks
at BIG Savings...Call Now!**

Software That Fits™
1-800-972-3018

P.O. Box 4028 • Humble, TX 77347

(713) 540-2300

Circle 141 on reader service card

BIGGER MAC

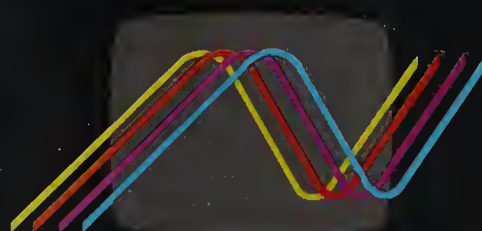
The First 19 Inch Auto-Syncing
Color Monitor For The MAC II



Introducing the 1019/SP AUTO-SYNC by MICROVITEC, Europe's largest independent manufacturer of high resolution color monitors. AUTO-SYNC is the first monitor to offer MAC II users all of the benefits of auto-syncing technology in a 19-inch display. Now high quality CAD/CAM, desktop publishing, presentation graphics, etc. can be displayed clearly and prominently...at a price you'll like.

MODEL	1019/SP
Tube Size:	19 inch
Phosphor Dot Pitch:	0.31 mm
Horizontal Scanning Frequency:	15 kHz-36 kHz, infinitely variable
Vertical Scanning Frequency (Refresh rate):	45 Hz-100 Hz
Horizontal Flyback:	5µS
Vertical Flyback:	600µS
Video Bandwidth:	40 MHz (3dB)
Supply Voltage:	90V-230V A.C.
Power Consumption:	100W
C.R.T. Resolution:	1365 x 886
Typical Displayed Resolution: (Graphics controller dependent)	640 x 480, 800 x 600 non-interlaced
Screen:	High contrast Black matrix
Video Inputs:	RGBI-TTL, RGB-Analog
User Controls:	Brightness, Contrast, Power, Video input, Manual de-gauss, Height, Width, Horizontal shift, Vertical shift, TTL mode.
Cabinet:	Styled metal E-Series
Height, Width, Depth:	H: 445 mm/17.5" W: 470 mm/18.5" D: 494 mm/19.5"
Weight:	27 kg/59 lb.

LIST: \$2395



DEFINITION
MICROVITEC

MICROVITEC
(404) 991-2246

ALL REGISTERED TRADEMARKS ARE THE PROPERTY OF APPLE COMPUTER CORPORATION

Circle 152 on reader service card

New Products

Executive Advisor Great Plains Accounting Series module generates more than 75 business ratios and analyses in graph, chart, and table formats. Exception reporting, period-by-period comparisons, budget and industry average indexes available. \$595. Great Plains Software, 701/281-0550.

Extend Fully programmable general-purpose systems simulator. \$495. Imagine That, Inc., 408/365-0305.

Federal JobLink Twenty-five pages of forms and instructions for obtaining a federal job, and guidelines for how to produce a well-organized application. Requires MacDraw. \$49.95 plus \$3 s/h. Multisoft Resources, 301/977-6972.

Flight Plan General aviation flight-planning product. \$99.95. IGS International, 408/438-2276.

Font/DA Juggler Plus Utility lets you access up to 12 files containing fonts, desk accessories, F-keys, and digitized sounds as if they had been installed in the System file. Ability to compress fonts. \$59.95 plus \$3 s/h. Alsoft, 713/353-4090.

FontShare Allows Macs on a network to share downloadable PostScript fonts residing on a server. 512KE min. memory. \$295. Olduvai Corporation, 305/665-4665.

GeoQuery Geographic analysis of computer-based information. "Smart" maps accurately classify and pinpoint location of various data. For use in conjunction with data-base, statistical, and spreadsheet software. 1MB min. memory. \$349. Odesta, 312/498-5615.

HyperPak 100 Over 100 public domain HyperCard stacks for business, education, entertainment, utilities, and sound. \$25, public domain/shareware catalog \$1. Budgetbytes, Inc., 913/271-6022, 800/356-3551 for orders only.

HyperSpell, Icon Factory, Script Expert HyperSpell verifies and corrects spelling in HyperCard. Icon Factory is a FatBits-style icon editor and art library containing over 250 sample icons. Script Expert lets you write HyperCard scripts by pushing

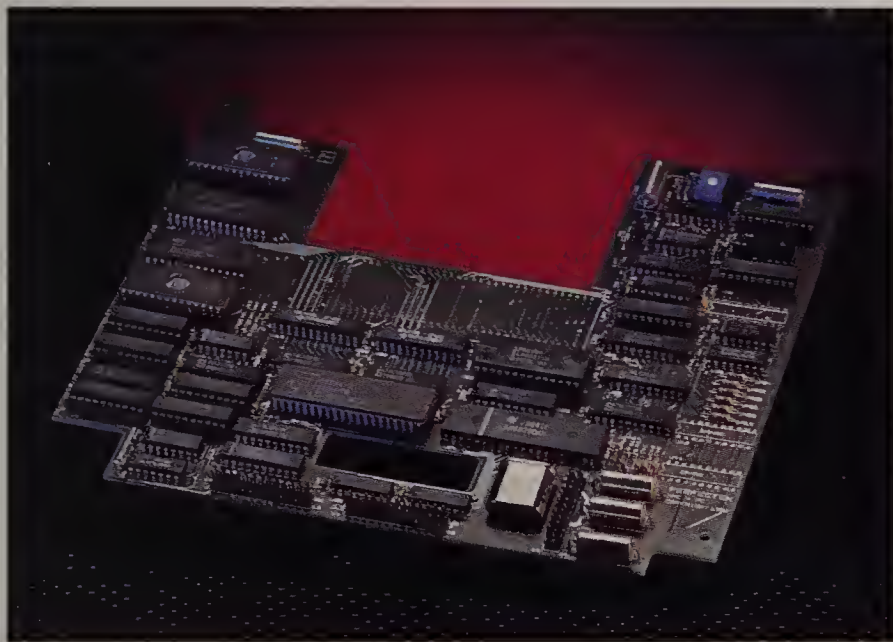
(continues)

MS DOSTM CO-PROCESSOR CARDS

For MacintoshTM Computers

from PerfecTEK

Mac + PC



For Your Macintosh Plus

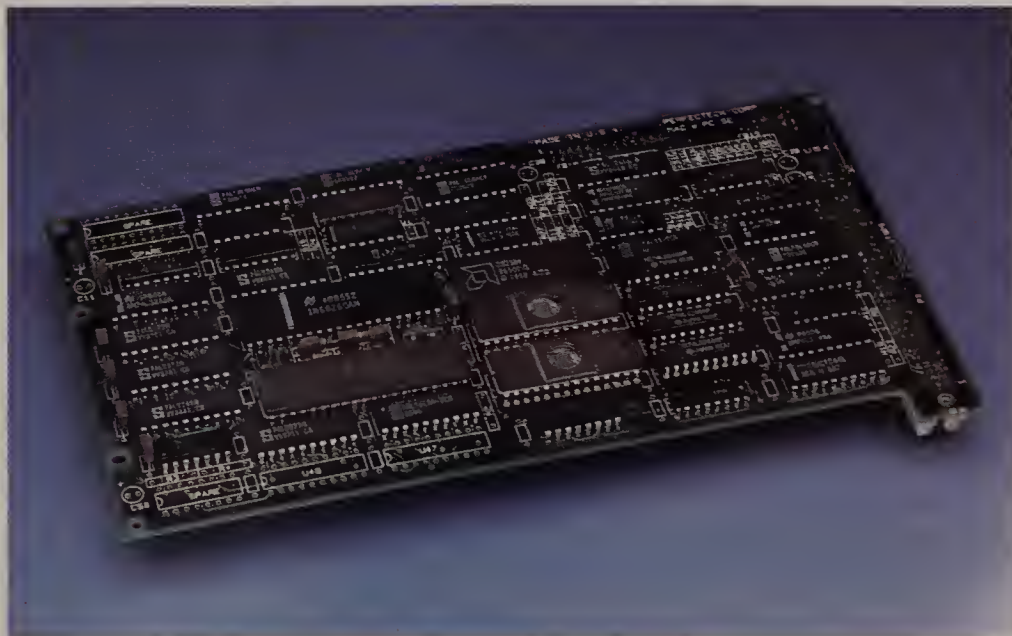
FEATURES:

- Configure up to 640K memory for DOS
- Use external 5 1/2" SCSI Drive or 3 1/2" Mac Drive
- Dedicate or share Hard Disk Drive
- Transfer files between Macintosh and MS DOS using our utilities
- Communicate with MS DOS Compatibles

More Features:

- Use "switcher" and multifinder
- Use Imagewriter/Laser Printers and IBM Compatible Letter Quality Printers (option)
- Emulate CGA/MDA Equivalent Graphics
- Easy Installations
- Great Value at Affordable Price

Mac + PC SE



For Your Macintosh SE

For Further Information:

PerfecTEK Corporation

726 S. HILLVIEW DRIVE, MILPITAS, CA 95035
Tel: 408-263-7757 • Telex: 984281

*Dealer/Reseller
Inquiries Invited*

Mac + PCTM is a trademark of PerfecTEK Corporation.
MS DOS is a trademark of Microsoft Corporation.
Macintosh PlusTM and MultifinderTM are trademarks of Apple Computer, Inc.
IBM® is a registered trademark of International Business Machines.

Circle 114 on reader service card

New Products

Buttons; it knows precise wording and programming rules for every command, function, message, and property in HyperCard. Icon Factory \$49.95, HyperSpell and Script Expert \$79.95 each. HyperPress Publishing, 415/345-4620.

Images with Impact Series PostScript clip art for desktop publishers. Graphics & Symbols 1 consists of Adobe Illustrator images for general use. Requires EPS-compatible program. \$99.95. 3G Graphics, 206/823-8198, orders 800/456-0234.

KaleidaGraph Data analysis and graphics presentation application. Lets you input raw data, edit and transform it, then plot and analyze it. 512K min. memory. \$179. Peripherals Computers & Supplies, 215/779-0522.

Language Systems FORTRAN Provides support for the full ANSI Standard FORTRAN 77 language, plus extensions such as DO WHILE, IMPLICIT NONE, and EN engineering number formatting. Adds the capabilities of the SANE, Apple's implementation of IEEE Standard 754 for Binary Floating-Point Arithmetic. \$295. Language Systems, 703/478-0181.

LaserTalk PostScript development environment allows interactive control of the PostScript interpreter and lets you view contents of the printer's screen buffer. Includes integrated editor and debugger, online documentation, and a dictionary browser. 1MB min. memory. \$249. Emerald City Software, 415/368-8303.

Liaison Software bridge allows you to dial into and share the resources of your office network. Features address book and network access password protection. 512KE min. memory; requires Hayes-compatible modem at each end. \$195. Infosphere, 800/445-7085, 503/226-3620 in Oregon.

MacMaster Templates, Aldus PageMaker Edition Graphics tablet driver with template overlay capabilities that enable software commands to be accessed directly from tablet surface. \$139, subtemplates \$69. AutoEase Inc., 800/752-3273, 801/224-8833 in Utah.

MacSQZ Compresses Microsoft Excel files up to 95 percent. Lets you assign pass-

words to files, maintain history of changes made to a file, and squeeze multiple files in a single operation. 512K min. memory. \$79.95. Symantec, 408/253-9600.

MenloCom Connectivity software that allows applications running on Tandem Computers to communicate with Mac presentation applications. Price to be announced. Menlo Business Systems, 415/948-7920.

Music Publisher Object-oriented music notation package with automatic part extraction and selective transposition. 512K min. memory. \$195. Shaheerazam, 414/442-7503.

Nexpert Object Mac II expert-system development program. Supports both object-based and rule representations, includes incremental compiler, and allows calls to external programs. Cross-compatible with Nexpert Object on VAX and IBM AT PS/2 versions. MultiFinder compatible. \$5000. Neuron Data, 415/321-4488.

Nisus Word processor includes integrated graphics tools. Keeps track of page, section, and line numbers. Search and replace can be font- and/or style-sensitive. Counts characters and words, calculates average word length. 512KE min. memory. Approximately \$200. Paragon Concepts, 800/922-2993, 619/481-1477 in California.

PICT Detective Symbolic analysis of any valid QuickDraw picture; provides structured description of objects from a standard PICT file or reads directly from a PICT resource. \$69.95. Palomar Software, 619/727-3922.

Presentation Planner Helps analyze an audience and organize text and audiovisuals. \$195. Discus Electronic Training, 716/248-4300.

Publisher's PicturePaks Three clip-art collections: Executive & Management Edition, Finance & Administration Edition, Sales & Marketing Edition. MacPaint or EPS files. Fully cataloged and documented libraries. \$99.95 per edition, set of three \$250. Marketing Graphics, 804/788-8844.

RefMaker Downloads references from Brs/Medline or Biosis to a database or HyperCard stack. Assembles references into any format required; more than 20 formats supplied. \$49. Cat's Cradle Software, 313/665-6152.

Retrospect File archiving program features disk and archive browsing, automatic operation, and volume printing. Price to be announced. SuperMac, 415/962-2900.

Roundup Utility lets you search file contents for a given character string. Displays file name, path to the file, and search string in context. \$29.95. Virginia Systems Software Services, 804/739-3200.

SCSI Tool Utility assists in development of SCSI hardware and software by enabling user to create, edit, and execute SCSI commands. \$175. Arborworks, Inc., 313/747-7087.

Simply Accounting Integrates general ledger, payables, receivables, payroll, inventory, and project cost. 1MB min. memory. \$349. Bedford Software, 206/883-0074.

StatView II Interactively explores and analyzes data; creates publication-quality charts using a Mac II's 16 million colors. Requires Mac II. \$495. Abacus Concepts, 415/540-1949.

Tax Guide for Small Business Two-disk stackware set. Comprehensive coverage of IRS Publication #334, *Income, Excise, and Employment Taxes for Individuals, Partnerships, and Corporations*. 1MB min. memory; hard disk recommended. \$79.95. Aardvark Software, 713/872-8085.

Teach Yourself Training Guides Series of training guides for PageMaker, HyperCard, 4th Dimension, Omnis 3, Microsoft Excel, Word, and Works. Includes brief explanation of each concept, instructions, and a screen copy illustrating the progression as commands are executed. Comes with stand-up easel binders and training disks. \$69.95 per guide. Tutorland, 408/973-0472.

Touch OSI Mac Developer's Kit Enables software developers to implement network-based applications utilizing industry-standard OSI protocols. Kit consists of protocol stack, Touch Programmatic Interface, programmer's reference manual, source header files, and selection of examples. Includes end-user utilities for filing and remote printing. \$545. Touch Communications, 408/438-7927.

(continues)

SOFTWARE

BUSINESS & PRODUCTIVITY

ABA Software	
Draw It Again, Sam (2.0)	\$89.95
Aegis Development	
Doug Clapp Word Tools	\$44.95
Affinity	
Affinityfile	\$39.95
Tempo II	\$79.95
Aldus	
Pagemaker	\$CALL
Ann Arbor	
Full Paint	\$49.95
Fullwrite Professional	\$CALL
Ashton-Tate	
dBase Mac	\$289.00
Batteries Included	
Disk Tools Plus	\$39.95
Thunder 1.1	\$29.00
Berkeley Systems	
Stepping Out II	\$54.95
Blyth Software	
Omnis 3+ w/Express	\$269.00

BORLAND	
Eureka	\$127.00
Reflex	\$59.00
Reflex Plus	\$159.00
Sidekick 2.0	\$59.00
Turbo Pascal	\$59.95

CE Software	
Disk Top 3.0	\$29.95
QuickKeys	\$59.95
Central Point	
Copy II Mac	\$24.00
Chang Labs	
C.A.T.	\$219.00
Rags to Riches 3 pak	\$287.00
Cricket Software	
Cricket Draw (1.1)	\$159.95
Cricket Graph	\$119.95
Device Driver	\$299.00
Presents	\$299.00
Statworks	\$69.95
Data Tailor	
Trapeze	\$159.95
Dataviz	
Mac Link+ w/cable	\$129.00
Deneba	
Canvas	\$119.00
Coach	\$64.00
Coach Thesaurus	\$39.00
Comment	\$57.00
Sensible Grammar	\$59.00
Dubl-click	
Calculator construction set	\$39.95
Wet Paint vols 1 & 2	\$39.95
World Class Fonts Bundle	\$39.95
Fifth Generation	
Fastback	\$54.95
Foundation Publishing	
Comic Strip Factory	\$54.95
Letraset	
Image Studio	\$279.00
Ready Set Go (4.0)	\$279.00
Living Videotext	
More (1.1)	\$149.00
Macromind	
Video Works II	\$129.00
Macropac	
101 Macros for Excel	\$42.95

Microsoft	
Basic	\$59.95
Chart	\$69.95
Excel	\$239.00
File	\$109.00
Fortran	\$167.00
Powerpoint	\$CALL
Word	\$239.00
Works	\$189.00
Write	\$129.00

Mindwork Software	
Mindwrite (1.1)	\$169.00
Monogram	
Dollars & Sense (4.0)	\$89.00
Nashoba Systems	
Filemaker Plus	\$CALL

Odesta	
Double Helix II	\$339.00
Oldavai Software	
DA Switcher II	\$32.95
Icon-It! (1.1)	\$44.95
Post Art II	\$CALL
PCS	
Versaterm Pro	\$194.00
Satori	
Bulk Mailer +	\$199.00
Legal Billing	\$329.00
Project Billing	\$419.00
Silicon Beach Software	
Super Paint	\$79.00
Software Supply	
PowerStation	\$37.95
Suitcase	\$37.95

GAMES & EDUCATIONAL

Avalon Hill	
MacPro Football	\$27.95
Broderbund	
Print Shop	\$37.95
Bullseye	
Ferrari Grand Prix	\$34.95
Fokker Triplane	\$34.95
Davidson & Associates	
Math Blaster	\$27.95
Speed Reader II	\$37.95

ELECTRONIC ARTS	
Chessmaster 2000	\$29.95
Deluxe Music	\$59.95
Construction Set 2.0	\$59.95
Patton vs Rommel	\$26.95
Scrabble	\$27.95
Starfleet 1	\$34.95
Venture's Business	\$44.95
Simulator	\$44.95

HARDWARE

APPLE	
Call For Pricing On: Mac Plus, Mac SE, & Imagewriter II	
MODEMS	
Everex	
2400 Baud, 100% Hayes Compatible	\$229.00
Mouse Systems	
A+ Mouse	\$69.95
A+ Mouse ADB	\$84.95
Softstyle	
MacEnhancer	\$149.00
Thunderware	
Thunderscan (4.0)	\$189.00
Datadesk	
Mac 101 Keyboard	\$139.00

ACCESSORIES

Blohard	
MACFAN	\$79.95
Ergotron	
Mouse Cleaner	\$14.95
MacTilt	\$69.00
MacTilt SE	\$69.00
I/O Design	
MAC+/SE Bag	\$59.95
Mac SE Ext Bag	\$69.95
Imagewriter Bag	\$49.95
Imagewriter II Bag	\$44.95

EDUCATIONAL & CORPORATE ACCOUNTS:	
We offer a full line of services catering to your needs. To reach our Educational & Sales Department	
Call 1-800-533-1131 For Information	
Call 814-234-2236	

Software Ventures	
Microphone II	\$CALL
SuperMac	
Sentinel	\$84.95
Icon-It! (1.1)	\$44.95
Super Spool	\$84.95
Diskfit	\$49.95
Springboard	
Certificate Maker	\$29.95
Think Technologies	
InBox	\$229.00
InBox/PC	\$139.00
T/Maker	
Write Now	\$99.00
Word Perfect Corporation	
Word Perfect	\$CALL

EPYX	
Sub Battle Simulator	\$24.00
Microsoft	
Flight Simulator	\$32.95
Mindscape	
Balance of Power	\$29.95
Deja Vu	\$29.00
King of Chicago	\$27.95
Uninvited	\$29.95
P.C.A.I.	
Mac Golf	\$34.95
MacRaquetball	\$34.95
Silicon Beach	
Airborne	\$19.95
Dark Castle	\$27.95
World Builder	\$44.95
Simon & Schuster	
Typing Tutor IV	\$29.95
Spectrum Holobyte	
GATO	\$27.00
Falcon	\$24.95

DRIVES	
Ehman Engineering	
800K External Drive	\$189.00
MacBottom	
HD21 SCSI	\$749.00
HD20 Serial Version	\$769.00
HD32	\$879.00
HD45 SCSI	\$1149.00
Call For Pricing on Modem Options	

Swan TECHNOLOGIES	
800K External Drive	
\$169.00	

Kensington	
Drive Cleaning Kit	\$19.95
Filter	\$29.00
Mouse cleaning kit & pkt	\$16.00
Mouseway	\$9.95
System Saver	\$59.00
Tilt/Swivel	\$19.95
Turbo Mouse	\$77.00
MAC CABLES	
Call for Price & Configurations	
MAC RIBBONS	
Imagewriter Ribbons	\$5.95

DISKS			
per box of 10			
	1-4	5-9	10+
SONY			
SS/DD	12.45	11.95	11.45
DD/DD	16.95	16.45	15.95
MAXELL			
SS/DD	11.95	11.45	10.95
DD/DD	17.95	17.45	16.95
VERBATIM			
SS/DD	14.45	13.95	13.45
DD/DD	18.95	18.45	17.95

DON'T SETTLE FOR LESS...

tcp SHIPS IT



Software orders over \$100 & Accessories under 6 pounds will be shipped **FEDERAL EXPRESS**

(Yes even at these prices). You only pay TCP's standard shipping charge of \$4.00 per order. Orders arriving before 3:00 PM our time will be shipped out same day. If part of your order is backordered the remainder will be shipped UPS Ground for FREE.

EVEREX	
HARD DRIVES	
EMAC 20D	\$519.00
EMAC 20D Deluxe	\$579.00
EMAC 40D	\$939.00
EMAC 40D Deluxe	\$999.00
EMAC 60T	
Tape Backup	\$879.00

PROAPP	
ProApp 20S	
20MB HARD DRIVE	
Limited Quantities!!	
\$499	

Microsoft	
EXCEL (1.06)	\$239.00
WORD (3.02)	\$239.00
WORKS	\$189.00
WRITE	\$129.00

Deneba	
SOFTWARE	
Canvas	\$119.00
Coach	\$64.00
Coach Thesaurus	\$39.00
Comment	\$57.00
Sensible Grammar	\$59.00

CESoftware	
DiskTop (3.0)	\$29.95
QuickKeys	\$59.95

MIGENT	
Pocket Modem	
300/1200 Baud	
100% Hayes Compatible	
Includes Software & Cables	
1 YR Warranty	
\$119	

PCAI	
MacGolf	\$34.95
MacCourses	\$CALL
MacRaquetball	\$34.95

PRINT FOR LESS ...

DOVE	
COMPUTER CORPORATION	
MACINTOSH MEMORY UPGRADES	
MacSnap 524S	\$209.00
MacSnap 548S	\$429.00
MacSnap Plus 2	\$265.00
MacSnap 2S CMOS	\$459.00
MacSnap 4S CMOS	\$879.00
MacSnap 2 SE	\$299.00
Mach II/SE	\$CALL

Orange Micro Inc.	
Grappler Interface	\$69.95
Grappler LQ Interface	\$89.95
Panasonic	
Office Automation	
PRINTERS	
1080i II w/Grappler	\$279.00
1091i II w/Grappler	\$329.00
1092i w/Grappler	\$419.00
1524 (24 pin) w/Grappler LQ	\$749.00

TOLL FREE 1-800-468-9044

To order by mail: We accept money order, certified check, personal check. Allow 2 weeks for personal & company checks to clear. Shipping: \$4.00 for software. **FOR ALL HARDWARE AND ANY ACCESSORY OVER 6lbs** Call our Toll Free Number 1-800-468-9044 for shipping charges. Add \$3.00 per box shipped COD. Additional shipping required on APO, FPO, AK, HI. Terms: **ALL PRICES REFLECT CASH DISCOUNT. ADD 1.9% FOR MASTERCARD OR VISA. YOUR CREDIT CARD IS NOT CHARGED UNTIL YOUR ORDER IS SHIPPED.** All products include factory warranty **ALL SALES ARE FINAL.** Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.



OPEN: 8:00AM - 9:00PM Mon - Fri, 10:00AM - 6:PM Sat, 12:00PM - 8:00PM Sun East Coast Time. For Information Call 814-234-2236 FAX: 814-237-4450



TUSSEY COMPUTER PRODUCTS

P.O. BOX 1006
STATE COLLEGE, PA 16804

FREE ICON-IT! AND READ-IT! DEMOS.

(Because you'll
never know
how good 8½
mice are
unless you try
them)

How would you like to add custom icons to all of your applications to represent your most frequently used menu items, desk accessories, fonts, FKeys and even Excel, QuickKeys and Tempo macros? Or turn your Macintosh and any scanner (including ThunderScan) into a sophisticated Optical Character Recognition system to read any printed material into your word processing or desktop publishing application?

MacUser gave ICON-IT! a 4½ mice rating and READ-IT! 4 mice; saying that "if you're into icons, ICON-IT! is a must!" and "READ-IT!'s consumer value is unbeatable."

However, nice as they are, words and mice alone can't show you how good a program actually is.

Which is why we invite you to send for your FREE demo disk which also includes a HyperCard stack showing all of our software and hardware products.

OLDUVAI
 ◇ ◇ ◇ ◇ ◇ ◇ ◇ ◇
 / / / / / / / /

Just send a blank disk with your name
and address to:

OLDUVAI Corporation, FREE Demo, Dept. MW
7520 Red Road, Suite A, South Miami
FL 33143 (305) 665-4665 Fax (305) 665-0671

Offer ends August 31, 1988. All product names
mentioned are trademarks of their respective holders.

New Products

VideoWorks II Accelerator Speeds up animation to at least 30 frames per second. \$99.95. Brøderbund Software, 415/492-3200.

VideoWorks II Driver for HyperCard HyperTalk extension that calls up the VideoWorks driver from stacks. Enables user to create database of animation and sound documents, or use the clip animations to enhance stackware. \$99.95. Brøderbund Software, 415/492-3200.

Xerox 4020 Printer Driver Includes basic set of outline fonts that print to 120-dpi resolution. Thirteen LaserWriter typefaces; special effects like underline, shadow, outline, and rotation. Works only with Cricket products; does not support AppleTalk. \$149. Cricket Software, 215/251-9890.

HARDWARE

AX/2472 Modem capable of achieving error-free throughput of 7200 bps over standard telephone lines. Employs Microcom Networking Protocol Class 7. Features Enhanced Data Compression. \$899. Microcom, 617/762-9310.

Bit Pad Plus A 12-by-12-inch graphics tablet based on charge ratio. Comes with a stylus and special interface device for the Mac SE and II. \$495. Summagraphics, 203/384-1344.

CMS PRO100SE/r, CMS PRO150-II/i, CMS PRO300-II/i 100MB internal hard disk for Mac SE allows both internal floppy disk drives to stay inside the SE; 25-ms average access time. 150MB and 300MB internal SCSI hard disks for Mac II have average seek times of 16.5 ms. CMS PRO100SE/r \$1895, CMS PRO150-II/i \$2995, CMS PRO300-II/i \$4295. CMS Enhancements, 714/259-9555.

ColorVue SE Color video interface card allows SE users to display and print color from their applications. Displays up to 16 colors from a palette of 4096 on a monitor that is 75 percent larger than the SE screen. Features horizontal panning and automatic screen saver. \$695. Orchid Technology, 415/683-0300.

CopyMaker Plus Robotic disk handler performs copying, labeling, and printing operations. \$15,590. Applied Data Communications, 714/731-9000.

DataShow LCD projection pad allows display of electronic transparencies using any transmissive overhead projector. Features invert mode and contrast control. \$1495. Kodak, 716/724-3169.

DoubleTime-16 Accelerator card doubles Mac SE speed. Allows you to switch between 8MHz and 16MHz modes using the control panel desk accessory. \$395. Aox Inc., 617/890-4402.

EM330 SCSI hard disk with formatted capacity of 328MB, 20-ms average seek time, built-in power supply, interface cable, driver, and utility software. \$4895. Priam, 408/434-9300.

ExpanSE Plus Chassis System, SCSI Disk Option Lets Mac Plus utilize SE option cards. Comes with Mac Plus interface card; internal and external cables; and the expansion chassis, which contains an 80-watt power supply, a cooling fan, the chassis system board with four 96-pin connectors to mount four SE option cards, and four I/O ports. Optional 80MB SCSI disk. ExpanSE Plus Chassis System \$995, 80MB disk \$2995. Second Wave, 512/343-9661.

FaxPlus Combines a 9600-bps facsimile modem with a 2400-bps Hayes-compatible modem. Software features unattended error recovery, activity journal, time and date stamp, sender identification, auto redial. \$850. Cypress Research, 212/475-7782.

GatorBox Integrates Mac into Ethernet network environments. Comes preconfigured with network interfaces for LocalTalk network and Ethernet or ThinEthernet. Price to be announced. Cayman Systems, 617/494-1999.

Irwin Backup Tape Drives Self-powered SCSI backup systems that use DC 2000 minicartridge tapes. Comes with EzTape/Mac control software for image backup and streaming file-by-file backup. 40MB backup \$1395, 64MB \$1595. Irwin Magnetics, 313/996-3300.

Circle 21 on reader service card

IS/ADB Input System Tablet, 8½ by 11 inches, comes with corded pen. Supports the ADB port on the Mac SE and II. \$395. Kurta Corp., 602/276-5533.

MacLab Data acquisition system measures data, provides hard copies of oscilloscope tracings, compares waveforms, and saves data for later analysis. \$2925. World Precision Instruments, 203/469-8281.

MacTape/SCSI Nine-track autoloader tape drive allows Mac to read and write magnetic tape at 800/1600/3200/6250 bpi, via the SCSI port. Includes utilities to read and write tapes, move tape by block or file, and back up and restore individual or multiple files. Tridensity version \$7695, quad-density version \$10,500. Blackhole Technology, 617/721-7690.

Micron Add-in Memory Memory expansion kits consisting of SIMMs, each of which supplies 1MB of memory with eight 1MB dynamic RAM components. Includes installation guide. 2MB \$599, 4MB \$1199, 8MB \$2399; 1MB Mac II kit \$249. Micron Technology, 208/383-4000.

Mirus FilmPrinter Digital film recorder supports up to 16 million colors and 8000 lines of addressable resolution. Generates photo-lab quality, 35mm color slides. Under \$6000. Mirus Corporation, 415/949-5544.

PageView Fifteen-inch portrait-mounted display with 8-by-10-inch viewing area. Two resolution modes: 144 dpi, 72 dpi. Includes adapter board. \$1500. Sigma Designs, 415/770-0100.

Rodime Drives External hard disks with formatted capacities of 62MB, 104MB, and 144MB. Average seek time 28 ms. Rodime 60 Plus \$1795, Rodime 100 Plus \$2295, Rodime 140 Plus \$2595. Rodime, 305/994-6200.

Silver Sentry Series Mass storage devices with optional Mac II logic board, file server software, disk cache, and selection of cabinets. Average access time 18 ms. Comes with backup software plus collection of

more than 30MB of public domain software. 850MB model starts at \$19,995; available in capacities up to 14 gigabytes. Hard & Soft, 305/772-0430.

ST3 Programmable, 68000-based, 12.5 MHz gateway connects non-Apple peripherals to AppleTalk. Performs user-supplied polling protocols, device-specific data edits, and handshaking. Supports 64K of program ROM and up to 1MB of downloadable, user-supplied application. Synaptic Technologies, 714/859-0570.

TraceLink Interface box enables you to use any RS-232C graphics digitizer with Mac applications. Conex Electro Systems, 206/734-4323.

ACCESSORIES

Desk Organizer Wooden platform for the Mac holds both external and hard drives. Keyboard or other peripherals fit underneath. \$30. Harwell Consulting Services, 213/433-3807.

HyperDialer Automatically dials telephone numbers from HyperCard without tying up the Mac's serial port. \$34.95. Datadesk International, 818/780-1673.

Mousetrap Storage and swivel stand with a 9-by-12-inch footprint. \$54.60 plus \$4 s/h. Gered Corporation, 503/591-8658.

SE Silencer Ball-bearing rotary fan installs without soldering or special modifications. Operates at low speed. \$49.95. Mobius Products, 415/658-2939.

Vertical Disk Storage Wall-mountable or vertical-standing disk boxes available in capacities of 120 or 240. VDS120 \$29.95 plus \$5 s/h, VDS240 \$39.95 plus \$6 s/h. Vertical Solutions, 800/942-4008, 206/352-2097. □

To have your product considered for inclusion in New Products, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number to New Products Editor, Macworld, 501 Second St., San Francisco, CA 94107. We reserve the right to edit press releases.

WHY TYPE IT, WHEN YOUR THUNDER- SCAN CAN READ IT!

OLDUVAI

Now, thanks to READ-IT! Optical Character Recognition software, your ThunderScan can be used to input text from books, magazines, letters, phone books, in fact most any printed word, into your Macintosh. READ-IT! converts scanned images into text files which you can then edit in your word processor, store in your database or use with your desktop publishing application.

READ-IT! comes pre-trained for most popular fonts. And you can also teach READ-IT! to recognize virtually any new typeface, even foreign and special characters.

So if you're looking for the best way to enter printed data, the solution is as simple as the process. See your dealer or call toll-free 1-800-822-0772. And READ-IT!

To receive a FREE demo of READ-IT! and the Olduvai product line HyperCard stack, just send us a blank disk.

READ-IT! O.C.R. for ThunderScan: \$149



"...the consumer value is unbeatable"
MacUser,
February
1988

READ-IT!!!!!!
READ-IT!!!!!!
READ-IT!!!!!!
READ-IT!!!!!!

Optical
Character Recognition
Software for
ThunderScan

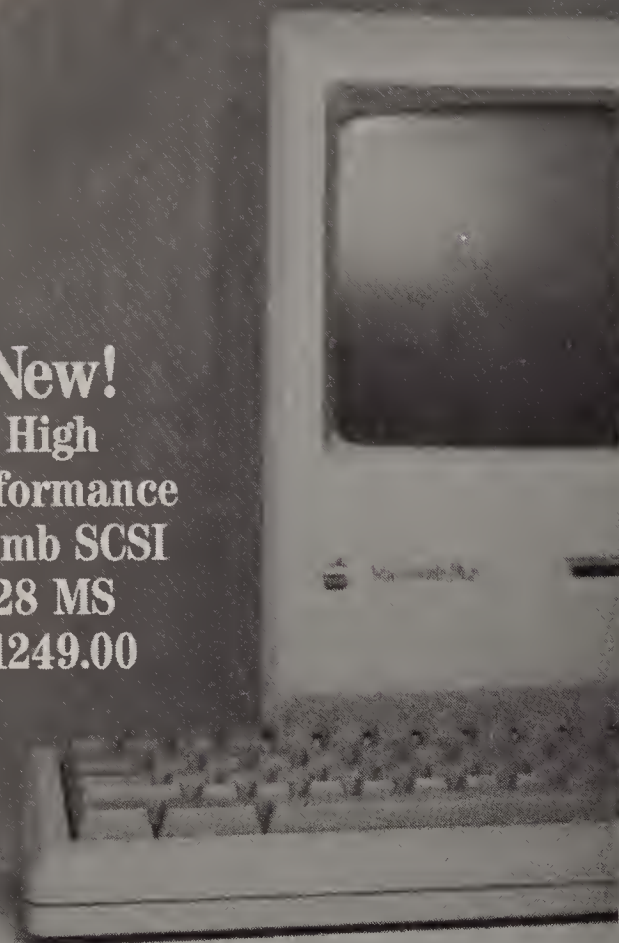
OLDUVAI Corporation, 7520 Red Road, Suite A,
South Miami, FL 33143
(305) 665-4665 Fax (305) 665-0671

READ-IT! is not copy-protected and requires 1 Meg. RAM and any scanner.
ThunderScan version requires 512K and ThunderScan 4.0.

All product names mentioned are trademarks of their respective holders.

Circle 39 on reader service card

New!
High
performance
80 mb SCSI
28 MS
\$1249.00



Seagate



20 mb SCSI
65 MS \$560⁰⁰

40 mb SCSI
40 MS \$770⁰⁰

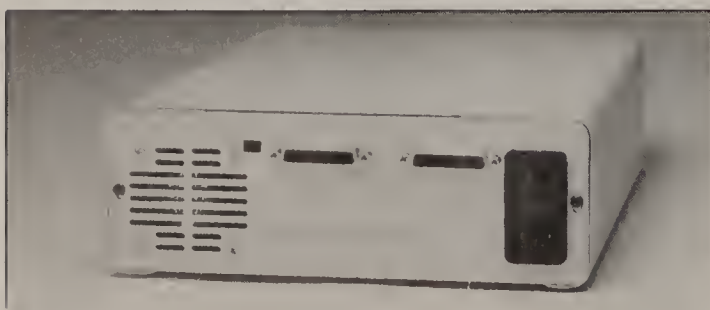
60 mb SCSI
40 MS \$839⁰⁰

APPLE CRATE™ & Seagate ...Quality Works

Introducing APPLE CRATE™

Our sub systems have been designed to provide quick and easy installation and are fully compatible with Apple Mac Plus, Mac SE and Mac II.

These powerful systems include driver and utility software, an internal power supply,



SCSI cabling, all necessary hardware and have been shock mounted for trouble-free transport.

The Apple Crate comes with a 2 YEAR WARRANTY on parts and labor and a direct watts line to our "72 hour turnaround" service department.

Complies with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC rules. Patent pending.

Apple, Apple Mac Plus, Mac SE, and Mac II are registered trademarks of Apple Computer, Inc.

The Apple Crate provides:

- Additional SCSI port which allows daisy-chaining up to 7 SCSI devices
- Convenient fuse holder
- SCSI address select
- Controls and cable controls—clearly marked and easy to operate.

In California • Nationwide
800-323-9994 • 800-543-5808
Call for same day orders or technical support



APPLE CRATE

6850 Vineland Ave., Bldg. M., North Hollywood, CA 91605

(818) 766-4001

Circle 97 on reader service card



Quick Tips

Answers to your questions

by Lon Poole

The other day William P. Benz stopped in at the *Macworld* offices to demonstrate MapGrafix, a sophisticated geographic information system for the Macintosh (Com-Grafix, Portland, Oregon, 503/285-1745). Instead of lugging his Mac in the usual padded bag, he wheeled it along on a folding luggage cart. Strapped in with bungee cords, a complete Macintosh system can travel securely.

At department stores you might pay as much as \$80 for a rugged cart, but Best stores offer two models, each only \$19.95. Benz has found the larger, big-wheeled Monarch Luggage model more practical for negotiating stairs.

Q Changing System Fonts

How can I change the fonts the System (version 5.3) uses? I use MacDraw with a LaserWriter and wish to remove the Geneva, Monaco, and Chicago fonts from my System. I'd rather use Helvetica and Times, but Font/DA Mover won't let me.

*Tom Fine
Harrison, New York*

A I assume you want to remove fonts to gain more space on your system disk. If you have a Mac II, an SE, a Plus, or a 512KE, Chicago 12 needn't cost you any disk space because it's built into the ROM of those models. In addition, Mac SE and Mac II ROMs contain Geneva 9, Geneva 12, and Monaco 9. However, these fonts are du-

plicated in the System file on disk even when they're in ROM.

You can remove any fonts from the System file by using ResEdit version 1.1B3 (July 14, 1987) or higher; it's available from most user groups. Follow these steps:

1. Make a copy of the system disk you want to change.
2. Start ResEdit, insert the system disk copy, and open first its System Folder (if any) and then its System file.
3. Open the FONT resource. You'll see a list of every font size in the System file.
4. Select each font size that you want to remove, and choose Clear from the Edit menu.

5. Close the FONT window and the System window. Click Yes to save changes.

If you remove Chicago 12, Geneva 9, Geneva 12, or Monaco 9, but that font is not in your Mac's ROM, to avoid ugly-looking text you should designate another font to replace it by using ResEdit as follows:

1. If you haven't already done so, follow Step 2 above.
2. Open the FOND resource. You'll see a list of the font family names, such as Chicago and Geneva, with their ID numbers.
4. Select the font family to be replaced and note its ID number (Chicago is 0, Geneva is 3, and Monaco is 4). Choose Clear from the Edit menu.
5. Select the replacement font family name, choose Get Info, and in the space provided, change the ID number to the one you noted in the previous step.
6. Repeat steps 4 and 5 for each font you want to replace. Then close the FOND window and the System window. Click Yes to save changes.

That's all there is to it. Remember, when the Mac changes system disks, it uses fonts from the new System. You may have to modify more than one system disk.

I don't recommend replacing Chicago 12. It's one of the few fonts that contain

the ⌘-key and Apple symbols, which appear in menus. Also, Chicago 12 is used for button and menu text. When it's dimmed (shaded gray), you can still read it, whereas most other fonts are illegible when dimmed.

Warning: Although I've tried these changes with several applications, I haven't done extensive testing. Some applications may not work correctly without Chicago 12, Geneva 9, Geneva 12, and/or Monaco 9. Be sure to make changes on a copy of your system disk first, and use the modified copy to test your application before putting the new system disk into service.

Q Getting the Quotes Right

How can I replace plain quotation marks (" ") in a word processing document with open and close quotes (" ")? A simple search-and-replace changes all plain quotes to either open or close quotes, rather than pairs of open and close quotes.

A Macify shareware by Eric Celeste converts plain quotes (double or single) in a text-only file to open and close quotes. It also changes apostrophes to open and close single quotes, double hyphens to long dashes, the *fi* and *fl* combinations to ligatures, and more. *Macify* is available from most user groups that have software libraries (call 800/538-9696 ext. 500 for the name of a group near you).

HyperCard can also make intelligent replacements in text documents. The script shown in "Quote Converter" replaces plain quotes with pairs of open and close quotes with the help of two external functions (XFCNs), **fileName** and **newFileName**, by

(continues)

Lon Poole answers readers' questions and offers advice in this monthly column. A collection of his compiled tips can be found in Mac Insights (Microsoft Press, 1987).


```

a mouseUp
  global openQ, closeQ, balance
  put "" into openQ
  put "" into closeQ

  --get source file name from std Open dialog (using an XFCN):
  put fileName("TEXT") into source
  if source is empty then exit mouseUp --user cancelled

  --get destination file name from std Save dialog (using an XFCN):
  put lastThing(":",source) into it --extract source file name from path
  put newFileName("Save conversion as:",it & ".Q") into dest
  if dest is empty then exit mouseUp --user cancelled

  set cursor to 4 --watch
  open file source
  open file dest
  put 0 into balance --keeps track of whether quotes balance
  repeat
    read from file source for 16384 --read 16K chunks
    if it is empty then exit repeat --end of file?
    write convertQuotes(it) to file dest
  end repeat
  close file source
  close file dest
  set cursor to 0 --normal
  if balance is 1 then
    answer "Oops! Quotes didn't balance."
  end if
end mouseUp

--Convert all quotes in variable it to open- & closed- quote pairs
--If the number of quotes is uneven, variable balance is 1
function convertQuotes it
  global openQ, closeQ, balance
  put 0 into qCount
  put offset(quote,it) into cNbr --find the first plain quote
  repeat until cNbr is 0
    add one to qCount --count this conversion
    if qCount mod 2 is 1 then
      put openQ into char cNbr of it --Odd nbr of quotes so far
    else
      put closeQ into char cNbr of it --Even nbr of quotes so far
    end if
    put offset(quote,it) into cNbr --find the next plain quote
  end repeat
  --keep track of whether quotes balance:
  put (qCount mod 2 + balance) mod 2 into balance
  return it
end convertQuotes

--Function lastThing extracts the part of string s
--that follows the last instance of character c
function lastThing c,s
  if c is in s then
    put lastThing (c,char offset(c,s)+1 to length(s) of s) into s
  end if
  return s
end lastThing

```

Quote Converter

This HyperCard script converts pairs of plain quotes (") in any text document to pairs of open and close quotes (" "). It requires two external functions (XFCNs): **fileName** and **newFileName**, which are available from user groups.

Andrew Gilmartin. The **fileName** function lets you pick the file to be converted from a standard Open dialog box. The **newFileName** function lets you specify the name and folder location of the new converted file. You can get these XFCNs from most user groups, such as BMUG in Berkeley, California, 415/549-BMUG or 415/849-9114. (Other user group librarians: Please send me catalogs of your disk libraries so I can mention your groups.)

If you can't find these external functions, you can type the file names in response to Ask commands. In the script, replace the line that contains the **fileName** function with the following:

ask "Document to convert"

put it into source

And replace the line that contains the **newFileName** function with the following:

ask "Name for converted "

document" with it & ".Q"

put it into dest

Q Faint Graphics

I created a letterhead with MacPaint and pasted it into my MacWrite documents. I can't figure out why it looks black in MacPaint but looks gray when printed in Best quality mode on an ImageWriter as part of a MacWrite document.

Ed Grier

Port Angeles, Washington

A This classic complaint seems no longer to be a problem with the latest ImageWriter driver software (version 2.6 or higher). The version number appears in small type in the dialog boxes you see when you choose Print or Page Setup from most File menus, including MacWrite's. You can get the latest version from an Apple dealer or a user group.

Creating a Legend

Tip: Legends that Excel automatically draws for charts can change a chart's size, and they can't be moved or resized. You can create your own legends without these limitations by using unattached text.

To make a key for one of the markers in the chart, type some blank unattached "text" (by pressing the space bar). Then choose Pattern from the Format menu and

(continues)

DESKTOP PUBLISHING

Publish!

The How-to Magazine

SUBSCRIBE NOW AND

SAVE 25%

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Publish!

Subscription Department

P.O. Box 51966

Boulder, Colorado 80321-1966

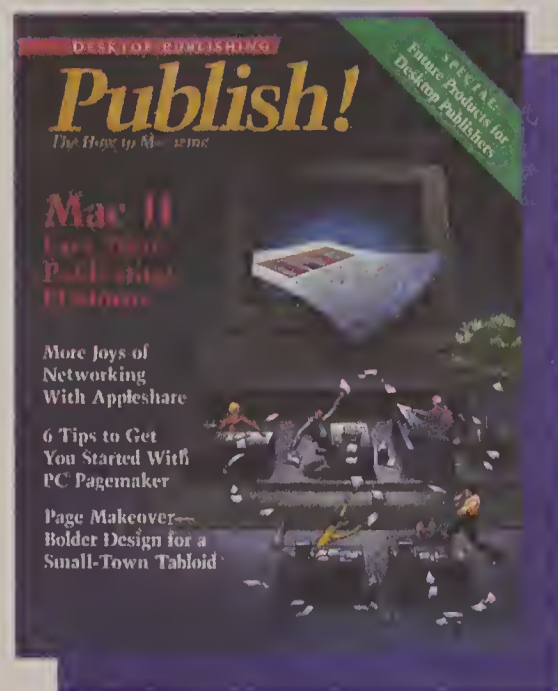
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



SAVE \$17⁴⁵!

Off the
Cover
Price

When you subscribe today



YES! I want to expand my desktop publishing potential. Please send me one year (12 monthly issues) of *Publish!* at the introductory rate of \$29.95. That's a savings of 25% off the regular subscription rate.

Please Bill me later.

Name _____

Company _____

Street _____

City _____

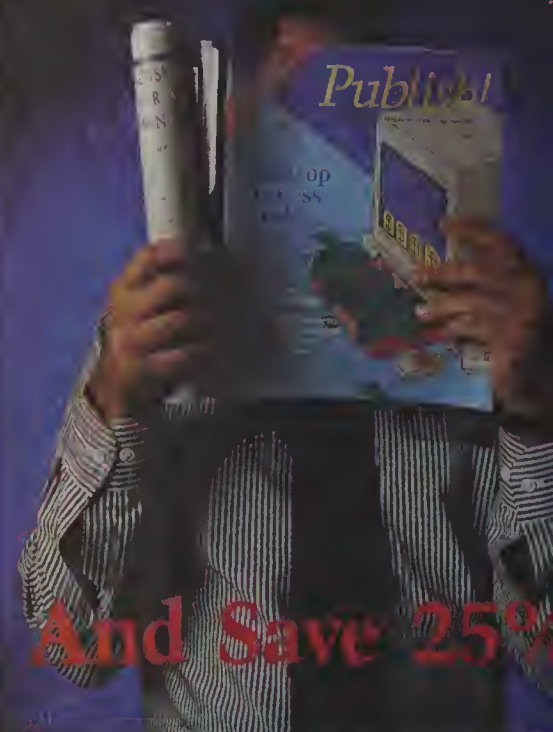
State _____

Zip _____

By regular subscription, *Publish!* is \$39.90 for 12 issues. The annual cover price is \$47.40 (12 issues). Offer available to new subscribers in the U.S. only. Please allow 6-8 weeks for delivery of your first issue. 5CCA4

Publish!

HANDS ON!



And Save 25%

DESKTOP PUBLISHING

FOR THE MANAGER

FOR THE DESIGNER

**Hands On
Solutions in
Publish!**

Each month in *Publish!* you'll find features, reviews and departments providing:

- Tips on the fundamentals of graphic design, typography and publishing.
- Professional designers offering creative ideas to enhance layout with page makeover suggestions.
- Information and reviews on the industry's latest hardware and software along with innovative applications.
- Shortcuts and tips on technical matters to cut costs while enhancing quality of communication.
- Techniques to build networks and share files electronically.

All this and more when you subscribe to *Publish!* Now!

FOR THE PUBLISHER

FOR THE EDITOR

SUBSCRIBE NOW AND

SAVE 25%

YES! Send me one year (12 monthly issues) of *Publish!* at the Special Subscription rate of \$25.95. That's almost \$10.00 off the regular subscription rate.

☐ Bill me later ☐ Payment enclosed

Name

Street

City

State

Zip

Mail to:
Publish! Subscription Dept.
P.O. Box 51966
Boulder, CO 80321-1966

Offer valid in the U.S. only. Please allow 6-8 weeks for delivery of your first issue.

Publish! regular subscription rate \$39.90 for 12 issues.
SCBA5

DESKTOP PUBLISHING

Publish!

The How-to Magazine

Produced by desktop publishers, for desktop publishers. *Publish!* serves as a laboratory for the industry—employing techniques and applications on the cutting edge of computer communications. Don't limit your desktop publishing potential—expand it with *Publish!*

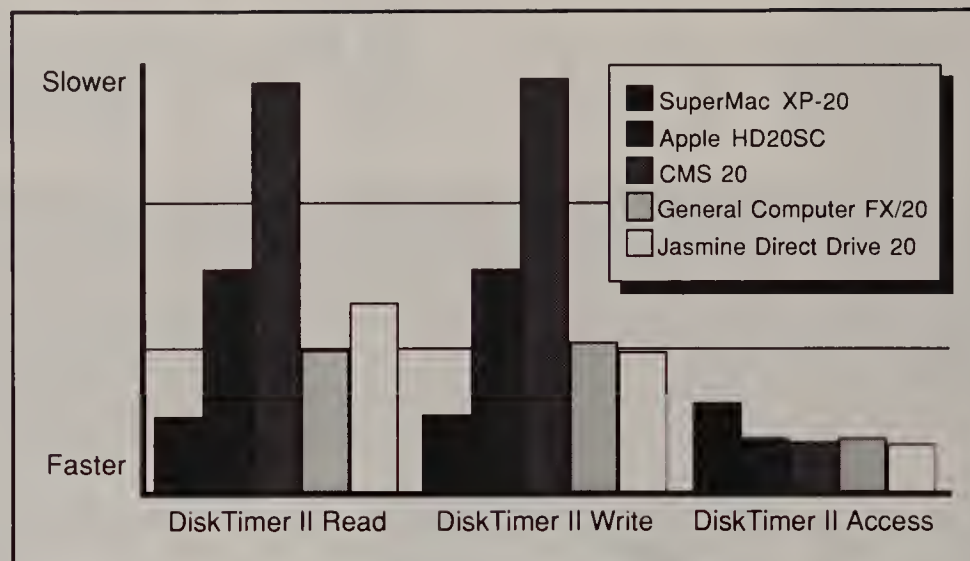
border and background patterns to the marker. Resize the key by dragging a handle at one of the corners or sides of the key. Move the key by dragging its center. Label the key with additional unattached text.

Put a border around the custom legend by creating more blank unattached text and selecting a black border using the Pattern command. Move and size the border to fit around the custom legend.

Gerald L. Gherardini
Karen A. Fabrion
Springfield, Illinois

For best results, I recommend creating the border first. Excel layers unattached text in the order you create it, and you don't want the border to cover the legend (see "Custom Chart Legend").

Custom legends created from unattached text do have a couple of limitations. For one, it may be hard to find space for a custom legend in the chart window, because Excel always draws the chart to fit the window. Also, moving an



Custom Chart

Legend

When Excel's standard legends won't do, create your own using unattached text.

entire custom legend is tedious, because you have to move the unattached text elements individually and then realign them all at the legend's new location.

Excel Find-and-Replace

Tip: Excel has a Find command that searches a selection for cells with a value or formula you specify, but it has no Replace command for changing the cells it finds. I wrote a macro that finds cells and replaces their contents according to your specifications (see "Fix Cells"). It can be very valuable when you find out that some-

one consistently entered part of a batch of data incorrectly on a large worksheet.

Before using the macro, you must select the cells you want to fix. Otherwise the macro searches the whole worksheet. The selection can be any size or shape.

When you use the macro, you first specify whether to look for cells containing numbers or text. Then you enter the cell contents to be found, followed by the

It's Simply been worth waiting for

Some time ago we told our development team to create a full-featured small business accounting program for the Macintosh™.

We told them that all the functions and features a small business would require had to be fully integrated under a single icon.

To ensure it built on our tradition of comfortable software, it had to qualify with our time-tested telephone support group, integrate smoothly with our payroll update service, and utilize our complete line of business forms.

Eighteen months later they gave us Simply Accounting™. We think the wait was worth it. Why not drop by your nearest Apple dealer and see what you think.

bedford®
making software comfortable™

Macintosh is a trademark of Apple Computer, Inc. • ® Indicates manufacturer's registered trademark • Simply Accounting is a trademark of Bedford Software Corp.

Bedford Software Corp.
15311 N.E. 90th Street
Redmond, WA 98052
(206) 883-0074

Circle 10 on reader service card

	A	B
1	Fix Cells (f)	Fix Cell Values Option-Command-
2	=ECHO(0)	Suppress screen changes during execution
3	=ALERT("Press cancel if you have not selected the correct range of cells",1)	Caution on selection, otherwise will do whole spreadsheet
4	=IF(A3=FALSE,GOTO(A29))	If CANCEL button is pressed, Exit
5	=INPUT("Is the Incorrect Information a Number or Text? Enter N or T:",2,"Fix Cells")	Identify existing field as a number or text
6	=IF(A5=FALSE,GOTO(A29))	If CANCEL button is pressed, Exit
7	=IF(A5="T",GOTO(A12))	If code is for "text", go to Type 2 Input statement
8	=IF(A5<>"N",GOTO(A5))	If code is not number, repeat Question, else fall through
9	=INPUT("Enter the Incorrect Number here:",1,"Fix Cells")	Enter numeric value to be changed
10	=SET.VALUE(A12,A9)	Put value in Cell so it can be found in Active.Cell compare below
11	=IF(A9=FALSE,GOTO(A29),GOTO(A14))	If CANCEL button is pressed, Exit, else go to next Input
12	=INPUT("Enter the Incorrect Text here:",2,"Fix Cells")	Enter text value to be changed
13	=IF(A12=FALSE,GOTO(A29))	If CANCEL button is pressed, Exit
14	=INPUT("Enter the Fix here:",2,"Fix Cells")	Enter the fix here, either text or number
15	=IF(A14=FALSE,GOTO(A29))	If CANCEL button is pressed, Exit
16	=MESSAGE(1,"Fixing all cells in selection")	Put message at top of screen
17	=ROW(ACTIVE.CELL())	Determine starting row
18	=COLUMN(ACTIVE.CELL())	Determine starting column
19	=SET.VALUE(A25,0)	Set value of counter to zero
20	=GOTO(A23)	Skip "starting cell" check for first cell
21	=SELECT("RC[1]")	Bump one cell for next compare
22	=IF(AND(ROW(ACTIVE.CELL())=A17,COLUMN(ACTIVE.CELL())=A18),GOTO(A23))	Check for return to "starting cell"
23	=IF(ACTIVE.CELL()<>A12,GOTO(A21))	Check match for incorrect text, fall through to fix or repeat loop
24	=FORMULA(A14)	Place corrected value in cell
25	=A25+1	Add 1 to counter for cells changed
26	=GOTO(A21)	Repeat loop
27	=ALERT(A25&" values converted",2)	Display count of cells changed
28	=MESSAGE(FALSE)	Cancel message at top of screen
29	=RETURN()	Exit

Fix Cells

This Excel macro finds and replaces the contents of cells in a selection according to your specification.

replacement contents. The macro uses different Input statements to distinguish between numeric and text entries. If you want to find and replace formulas or other types of cell contents, change lines 5 through 15 to accept that type of entry. For example,

you could accept input of a formula by changing lines 5, 8, and 9 as follows:
=INPUT("Is the Incorrect Information a Formula or Text? Enter F or T:",2,"Fix Cells")
=IF(A5 < > "F",GOTO(A5))
=INPUT("Enter the Incorrect Formula here:",0,"Fix Cells")

The numbers 0, 1, and 2 in the Input statements designate an entry as a formula, a number, or text, respectively.

Paul E. Mack
Dubuque, Iowa

MultiFinder Credits

Tip: If you press Option-⌘ while choosing About MultiFinder from the Apple menu, you'll be presented with movie-style credits for MultiFinder. I hope this provides hours of amusement.

Mike McKinnon
Olympia, Washington

HyperCard and Desk Accessories

Tip: Using desk accessories with HyperCard is troublesome, because you must close them before you can get back to HyperCard. David Oster's public exchange desk accessory WindowsDA will keep a DA open for you. (There is also another windowing DA called Windows, by Marshall Gosnell. It probably works the same way, but I haven't tried it.)

After choosing WindowsDA from the Apple menu, you can make HyperCard active by clicking its window behind an

(continues)

General Ledger

- entire fiscal year available for reports
- user definable chart of accounts
- produces full audit trail

Payables/Receivables

- uses open invoice method
- prints checks, invoices and statements
- user defined aging periods

Payroll

- automatic federal and state deductions
- accumulates QTD, YTD, W-2, 940 and 941 information

Inventory

- fully integrated with payables and receivables
- uses average weighted cost method
- handles adjustments and transfers

Jobcost

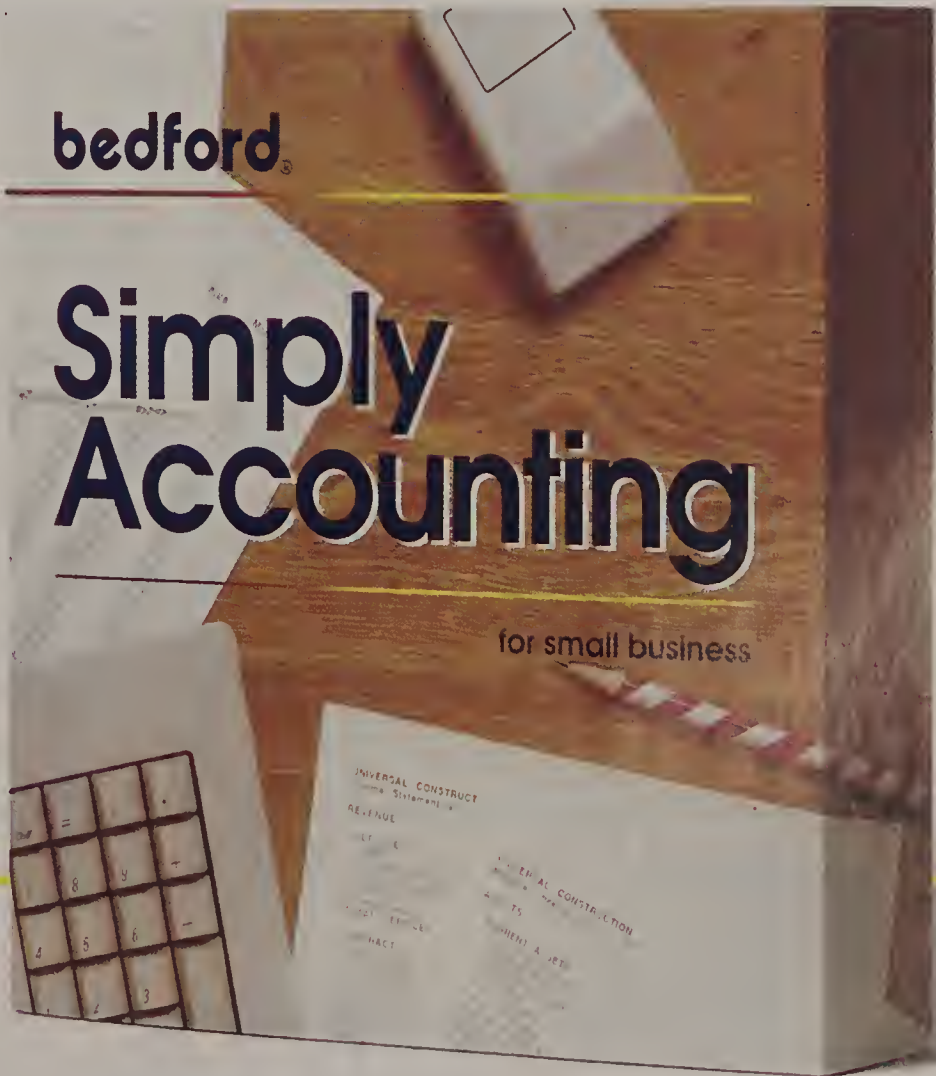
- distributes revenue or expense to projects or profit centers
- paycheck distribution includes the company's portion of FICA, SUTA and Disability Insurance

Requirements

- Apple® Macintosh™ computer with one megabyte of memory, 800K on-line storage and 128K ROM

Standard Features

- Six fully integrated functions
- Reports can be displayed, printed or exported
- Not copy protected





“How can I use my beloved Macintosh when everyone else around here is on DOS?”

Introducing *MacLinkPlus* from DataViz, a simple, low cost method of exchanging files between your Macintosh and an IBM PC or compatible.

“Is this one of those complicated, do-it-yourself jerryrigging things?”

Not at all. *MacLinkPlus* is simple. In one package, you get software for your Macintosh and the PC, plus a direct connect cable (or use modems, if you prefer). You don't need a special PC board ... just use your existing serial port.

“So I'm connected. What about “translating or converting” files?”

MacLinkPlus includes a “library” of more than 25 different data translators, including WordPer-

fect, Microsoft Word, MacWrite, DCA, Multi-Mate, WordStar, dBase, Lotus, and more. This library can also be used with the Apple File Exchange utility and your Macintosh DOS disk drive, file server or network product.

“All this will cost me an arm and a leg, right?”

\$195 for the package, complete. And that includes Macintosh to Macintosh communications and a TTY terminal emulator. Wang and NBI versions are available, too. See your Macintosh dealer, or call us at (203) 866-4944.

DATA*VIZ*

FREE SONY VHS* TAPE!!!

With every 50 **SONY** boxed or 100 **SONY** bulk diskettes purchased from this ad.



SONY

Boxed in tens

3 1/2" SS 1G36A12 1.14 each, 100+

3 1/2" DS 1G38A12 1.64 each, 100+

SONY MAC • PAC

3 1/2" SS 100+ **1.09** 400+ **1.01**
1H36A13

3 1/2" DS 1.17 1.14
1H38A13

Sony Labels 4¢ each, minimum 50

"desktalk II"

External Modem

- 1200/300 BPS
- Hayes Compatible
- Auto Answer / Auto Dial
- Includes Communication Software

\$83

D1-DTM-M

MAC • MODEM Turbo 24

External Modem

- Hayes Compatible
- Communication software included
- Upgradable to 4800 & 9600

Specify Mac or Mac Plus Cable

D1-24DTM
QLINK-MAC
F1-MACMODEM(P)

\$189



DATA TECH

Boxed in tens 100+ 500+
3 1/2" SS .94 .89
1P36A11

3 1/2" DD 1.09 1.04
1P38A11

APPLE IMAGEWRITER

RIBBONS

Sold in Sixes

Black 15-1P612 2.25

Color 15-197COLOR 2.85

(Color 6-packs: red, yellow, green, blue, purple and brown)

Stop by our Comdex Booth #5033

★ 7 to 7 Central ★ Saturdays 10 to 3 ★

USA★FLEX

1-800-872-3539

For Technical Assistance call 312-351-7172
Minimum order \$100, MasterCard and Visa accepted.

135 N. Brandon Dr., Glendale Heights, IL 60139

How To/Quick Tips

open desk accessory. Then to access an open desk accessory, choose it from the WindowsDA menu, which now appears in the menu bar.

Warning: The WindowsDA menu disappears from the menu bar if you choose any paint tool. To get it back, you must quit HyperCard. Still, this solution requires less memory than either Switcher or MultiFinder.

*Judy Engelsberg
New Milford, New Jersey*

I haven't used WindowsDA, but Gosnell's Windows 1.1 works exactly as you describe. It's available from user groups and online information services.

Print Merge by Numbers

Tip: Microsoft Word 3.01's Print Merge command lets you include all records from a data document or a range of records specified by beginning and ending record numbers. However, determining record numbers is tricky because you have to count records manually.

The solution is to choose the Renum-ber command from the Document menu in order to assign a number to every record. Specify a starting number of 0, which Word then assigns to the first record (the header record). Word automatically places a tab character after every record number, effectively adding another field at the beginning of every data record. The extra field does not interfere with the Print Merge command nor does it appear in your form letters, mailing labels, or any other merge-printed documents.

*Paul McKinnon
Downsview, Ontario, Canada*

We pay \$25 to \$100 for tips published here. Send tips or questions (include your address and phone number) to Quick Tips, Macworld, 501 Second St., San Francisco, CA 94107. Send electronic mail to CompuServe (70370,702), The Source (BCW440), or MCI Mail (addressed to Macworld). All published submissions become the property of Macworld. □

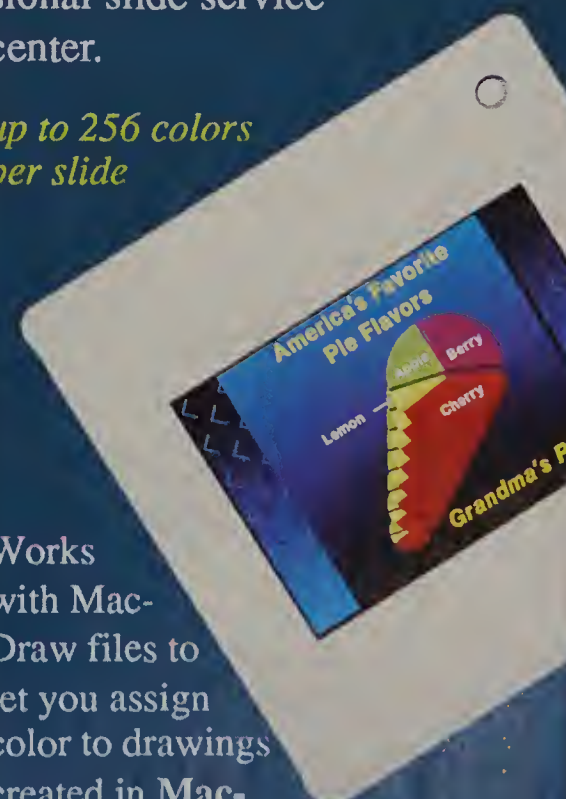
Color slides for your Macintosh professional image



20/20 Data

Systems and Stokes Slide Services introduce Professional Image – slide making software that bridges the gap between your Macintosh and a professional slide service center.

*up to 256 colors
per slide*



Works with Mac-Draw files to let you assign color to drawings created in Mac-Draw, PowerPoint, Excel etc.

Works in 256 colors on MacII !!

**Call for free samples & info
(512) 454-2508**

20/20 Data Systems

Macintosh is a trademark of Apple. PowerPoint and Excel are trademarks of Microsoft. Clipart: Desktop Graphics.

Circle 142 on reader service card

Circle 54 on reader service card



New this April!

1



2



3



4



5

6

When you leave the office, is the ImageWriter® buzzing in your ears all the way home? Does it take an hour before you can see clearly or stand up straight? Do you ever wonder how long you'll survive like this?

KENSINGTON HEALTH CARE

Stop torturing yourself. Kensington can help you lead a long, happy life with your Macintosh™.

1. Our **Maccessories® SuperBase** lets you shake off those prematurely stooped shoulders. It raises your Mac or SE 4" to a comfortable eye level, offers a tilt/swivel and a handy shelf for papers or a second drive. \$49.95

2. Our **Maccessories Tilt/Swivel** raises your Mac just 2"—perfect if you already have a Hard Disk (or aren't 6'4"). \$29.95

3. Our **Maccessories Anti-Glare Filter** is a sight for sore eyes. It reduces reflected glare by 91%, and improves screen contrast and clarity. \$49.95

4. Our **Copy Stand** puts your notes on a level with your screen, directly in your line of vision. \$29.95

5. Our **Printer Muffler 80** reduces printer noise by an amazing 75 to 85%. \$59.95

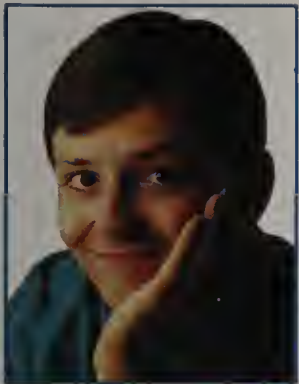
6. And our **Printer Muffler 80 Stand** raises your printer and Muffler 4" for handy paper storage. \$29.95

For more information, call (800) 535-4242. In NY, call (212) 475-5200. Or write Kensington, 251 Park Ave. S., New York, NY 10010.

KENSINGTON™ 

© 1988 Kensington Microware Ltd.

Circle 30 on reader service card



Getting Started with Color

From bitmaps and pixmaps to color wheels and CLUTs, a look at how color fits into the Macintosh world

by Jim Heid

The color capabilities of the Apple II helped make that machine a classic. But until recently, the Macintosh has lived in a black-and-white, or *monochrome*, world.

Did the Mac's designers have an aversion to color? No. The Mac was born color-blind more because of economics than aesthetics. Apple was determined to keep the Mac's size and cost down, but to give it a screen with enough resolution to display sharp graphics and a variety of fonts. Special high-capacity memory chips would have allowed Apple to shoehorn color capabilities into the Mac, but such chips were scarce and expensive in the early eighties. Moreover, the additional processing demands imposed by color would have made the original Mac unbearably slow—a pace it was approaching anyway.

But times change. Nowadays, high-capacity memory chips are plentiful and less expensive. In refining the Mac's system software, Apple has provided a sturdy foundation upon which to build future color Macs.

What Eight Bits Will Buy

Before looking at how color fits into the Macintosh world, let's examine how the Mac II displays color images. *Getting Started* readers will recall from previous columns that the Mac uses a *bitmapped* display (in Mac lingo, a color bitmap is



JOHN HERSEY

called a *pixmap*). Each screen dot, or *pixel*, corresponds to one bit in the Mac's memory. When a given bit has a value of 1, its corresponding pixel is on, or black. When a bit has a value of 0, its pixel is off, or white.

Because a bit can have only one of two values (1 or 0), a bitmapped display that uses one bit per pixel can display only two colors: black and white. Shades of gray can be simulated by *dithering*, in which groups of pixels are combined into patterns. The

Mac's gray desktop is an example of a dithered pattern formed by evenly spaced, alternating black and white pixels.

The secret to displaying color or true shades of gray is to assign additional bits to each pixel. Each additional bit lets the Mac II store more information about the pixel. Two bits per pixel can represent four colors. Four bits can represent 16 colors, and

(continues)

Jim Heid is a contributing editor who each month focuses on a different aspect of Mac fundamentals.

eight can represent 256 colors. You can tell the Mac II how many bits to assign each pixel by changing the Monitors setting in the Control Panel (see "Bits and Pixels").

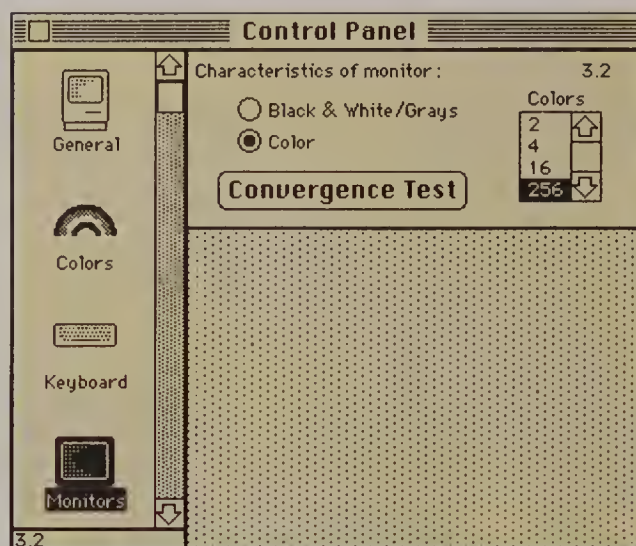
But how can only two bits represent four colors, or eight represent 256? In the video circuitry of a Mac II, the bits that represent each pixel can be on (assigned a value of 1) or off (assigned a value of 0) in different combinations. For example, when two bits are assigned to each pixel, four on/off combinations exist: both bits on; both bits off; first bit on, second bit off; first bit off, second bit on.

When four bits are assigned to each pixel, you get 16 on/off combinations. With eight bits per pixel, you get 256 combinations. Internally, the Mac II can use up to 24 bits to describe colors, giving it the ability to create more than 16 million different hues. But the number of colors that can actually be *displayed* at once depends on the video board you use. Because the Mac II's expanded video board assigns a maximum of eight bits to each pixel, it can display a maximum of 256 colors simultaneously.

So the Mac II's first step in determining a pixel's color is to determine the value of each of the pixel's bits. If you're using four bits per pixel, the value of each bit is a number between 0 and 15 (one of the 16 possible on/off combinations of that pixel's bits). The Mac II uses the resulting number to retrieve a color description from a *color look-up table*—the next stop on our tour of the Mac II's color capabilities.

A Pixel Is Born

These are the steps that bring color to the Mac II's screen. The process is the same whether you are using 2, 4, 8, 16, or 24 bits per pixel.



Bits and Pixels

The Control Panel's Monitors extension lets you specify how many bits the Mac II should assign to each pixel, and whether it should display colors or shades of gray. Expanded Mac II video cards can display 256 simultaneous colors or grays, while unexpanded cards are limited to 16.

I'd Like Three Pixels of Colonial Red...

If you've seen someone at a paint store mix a special color, you're well on your way to understanding color look-up tables (also called *CLUTs*, but not by me). When you buy a custom color, a store employee leafs through a paint-stained book to find the number of the color you want. Next to that number is a "recipe" listing the correct quantities of the appropriate pigments that must be blended to create the final color.

Now imagine that the Mac II's video circuitry is the paint store employee. Given a number that represents the state of the pixel's bits, the circuitry leafs through the color look-up table—which can hold the recipes for 256 different colors—to find

the recipe corresponding to the number. The recipe consists of three numbers that tell the circuitry how much red, green, and blue light is required to create that color.

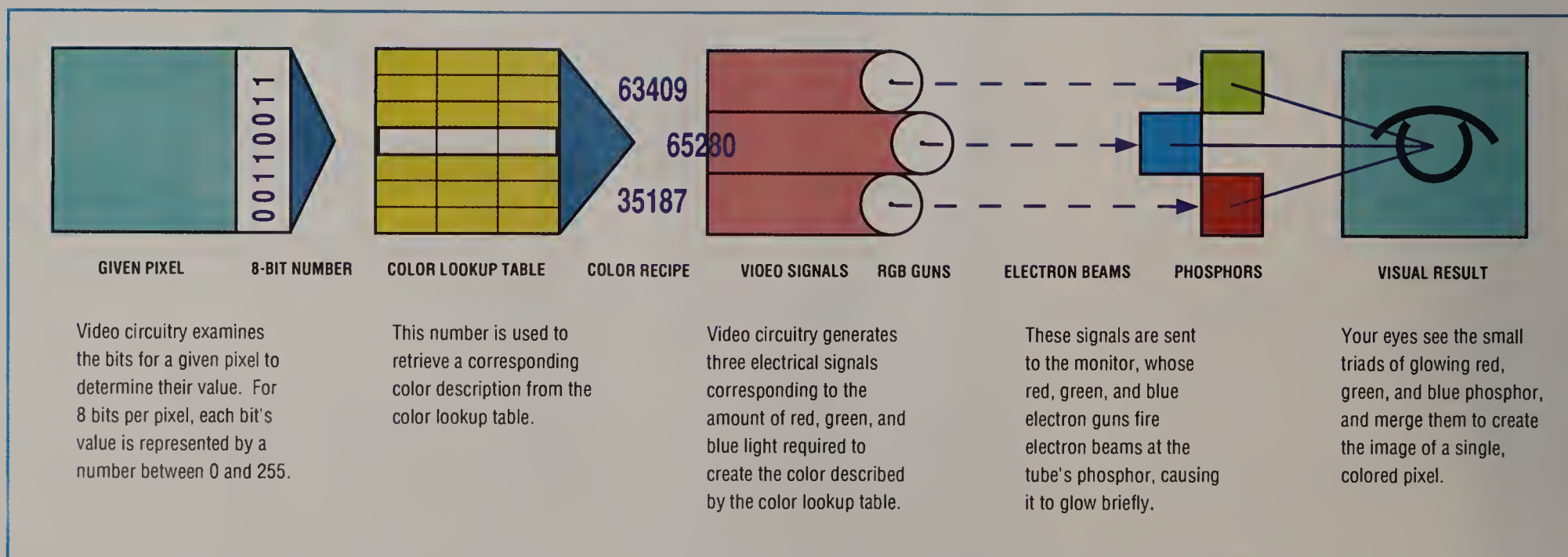
Next, the video circuitry generates electrical signals that control the red, green, and blue electron guns located in the back of the monitor's video tube. Each gun squirts a beam of electrons at the tube's display surface, which is coated with red, green, and blue phosphor dots. The phosphor glows briefly, but just long enough for your eyes to see the glow and detect varying degrees of red, green, and blue light. Because the dots are too small to be seen individually, they appear as a single colored pixel (see "A Pixel Is Born").

Satisfying Your Palette

Working with one color look-up table sounds hard enough, but the Mac II's capabilities don't end there. A system software component called the Palette Manager lets the Mac II load different color look-up tables into and out of the video board's memory.

This capability is especially important for image-scanning or color-painting applications. The 256 color descriptions that a look-up table can hold might seem like a lot, but they aren't enough to accurately render gradual color shifts and variations in shading. The solution is to create custom palettes in which unused colors are replaced with ones customized for the task at hand. For example, a portrait artist might replace the brilliant blues and Day-Glo greens in the palette with an expanded choice of flesh tones, while a landscape ar-

(continues)



talk talk talk talk
promises promises
talk talk talk talk
promises promises
talk talk talk talk
promises promises
promises promises



We deliver.

There has been a lot of talk about 24-bit color in the friendly Macintosh environment. If you're looking for more than just conversation, call us at RasterOps. We are delivering our 24-bit ColorBoard 104 worldwide.

24-bit color capability and the Macintosh II add up to the first truly usable and affordable professional design workstation. If you need to import high resolution, photo-quality, TrueColor graphics into the most popular design and layout applications, perhaps you should give us a call.

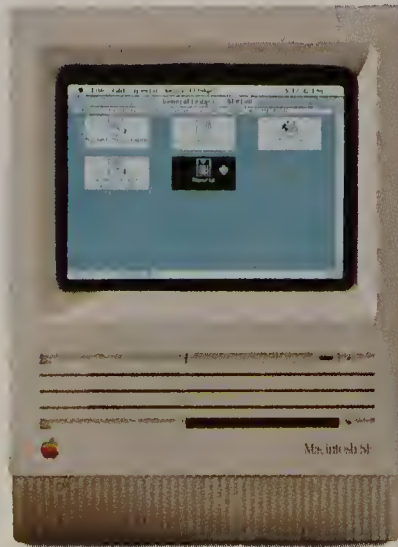
RasterOps Corporation
10161 Bubb Road
Cupertino, California 95014 (408) 446-4090
Dealers welcome fax no. (408) 446-4168
This ad was developed using a RasterOps 24-bit ColorBoard and Monitor.

Circle 13 on reader service card

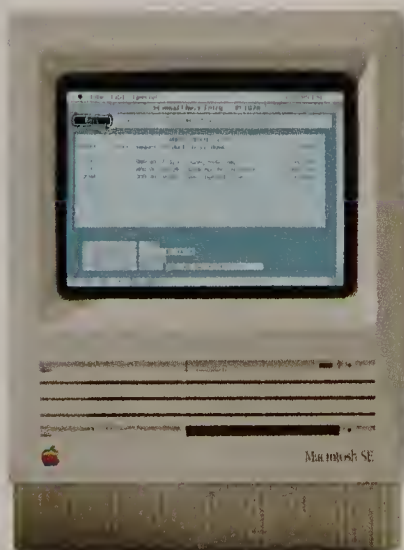
RasterOps

©1988, RasterOps Corporation. RasterOps, ColorBoard
and TrueColor are trademarks of RasterOps Corporation.
Macintosh is a trademark of Apple Computer, Inc.

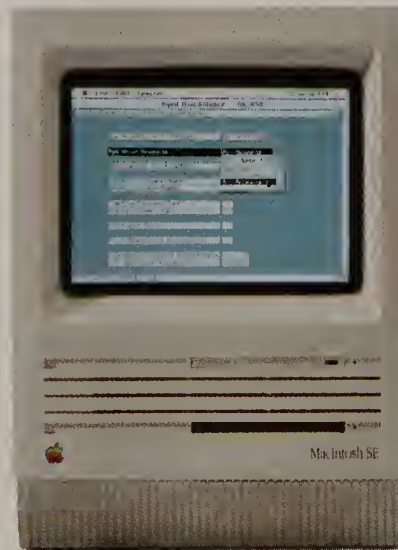
The obvious power of Great Plains



GENERAL LEDGER



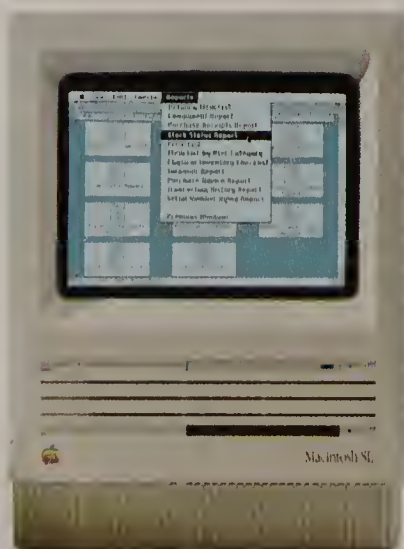
ACCOUNTS PAYABLE



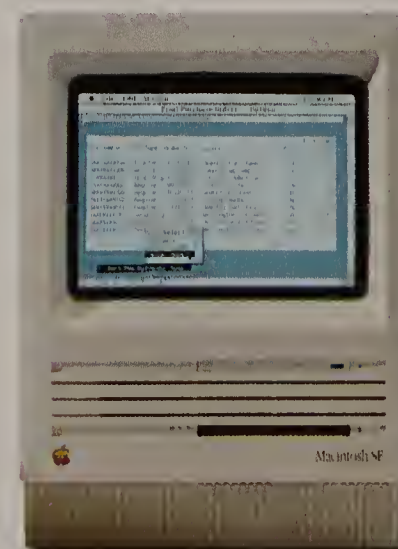
ACCOUNTS RECEIVABLE



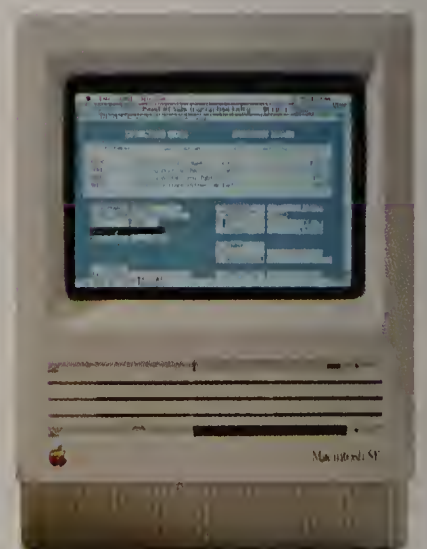
PAYROLL



INVENTORY

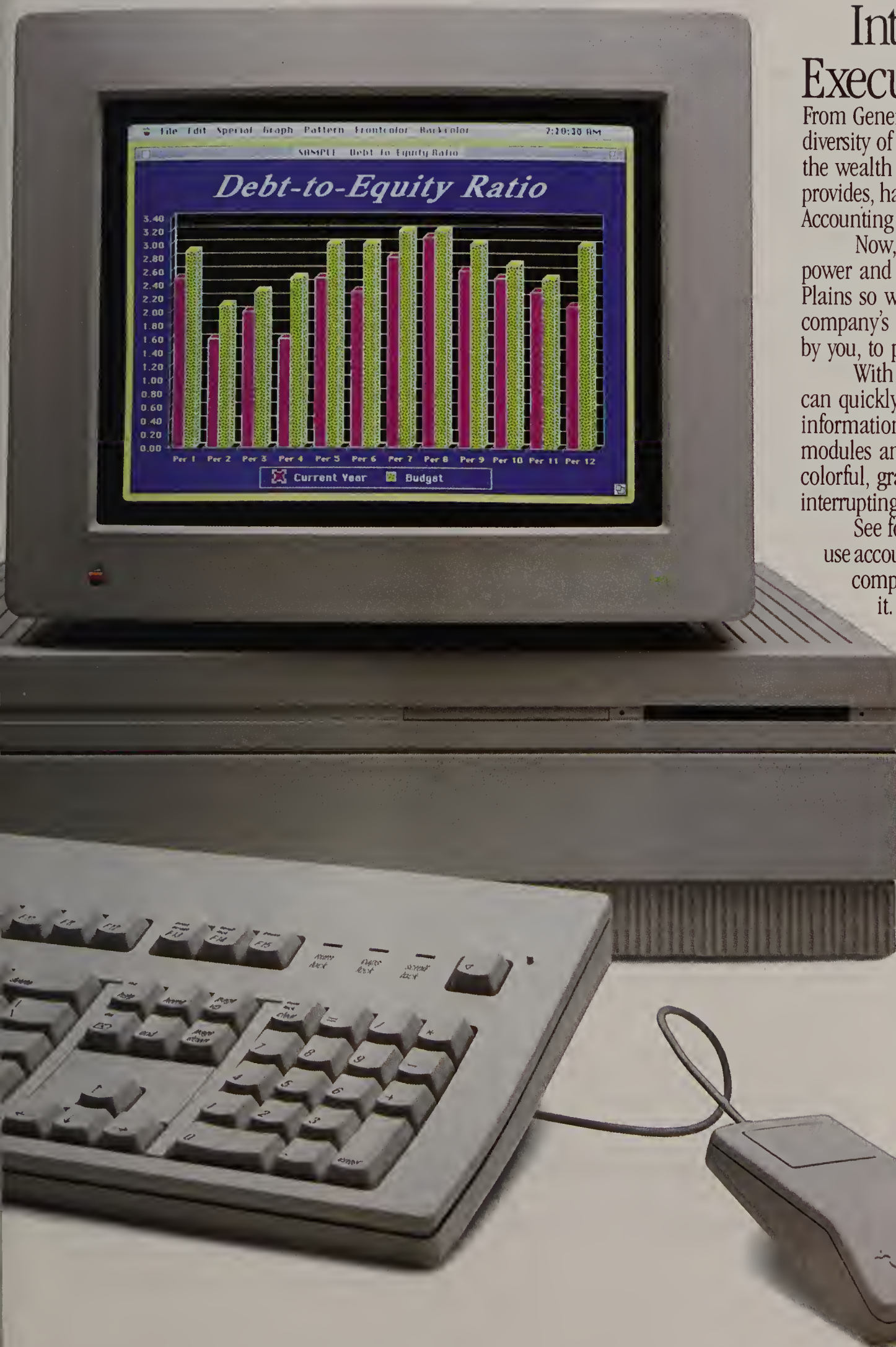


PURCHASE ORDER



ORDER ENTRY

...made even more obvious.



Introducing Executive Advisor

From General Ledger to Order Entry, the diversity of our software, combined with the wealth of information each module provides, has always kept the Great Plains Accounting Series ahead of our competition.

Now, with Executive Advisor, all the power and flexibility that make Great Plains so well suited for tracking your company's performance can be used, by you, to plan for its growth.

With just a click of the mouse, you can quickly draw valuable management information from the other Great Plains modules and see it displayed in a crisp, colorful, graphic format — all without interrupting normal accounting functions.

See for yourself how easily you can use accounting information to lead your company's growth, not just follow it. For a demo disk, call us at 1-800-345-3276. Or just send us the coupon below.

Either way, the benefits will be obvious.

I've enclosed \$10.00.
Please send me a demo disk
of Executive Advisor.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____
STATE _____
PHONE _____

Mail to: Great Plains Software
P.O. Box 9739, Fargo, ND 58109
Or call toll free: 1-800-345-3276

MW-588

 **GREAT PLAINS SOFTWARE**
GROW YOUR BUSINESS ON GREAT PLAINS

tist might prefer numerous shades of green and blue. The Palette Manager works with other system software component, the Color Manager, to make that possible.

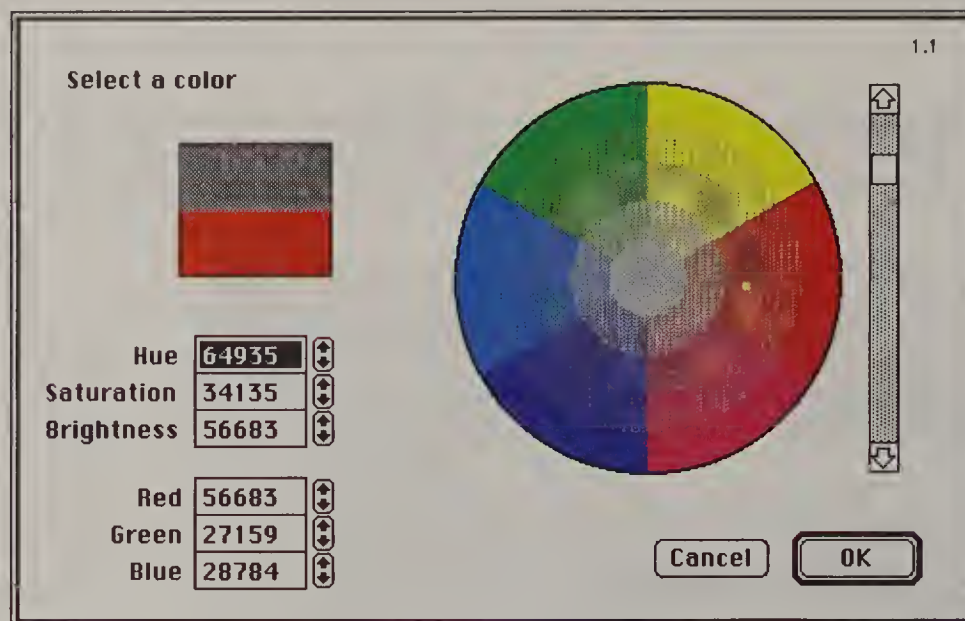
Another way to get more simultaneous colors is to buy a 24-bit video card such as RasterOps' ColorBoard 1/104, SuperMac's Spectrum/24, or Jasmine's Rembrandt-II or Rembrandt-III. All assign 24 bits to each pixel, giving you direct access to 16.7 million simultaneous colors. But with a price tag in the \$2000 to \$3000 range, one of these superboards can easily turn your bank balance bright red. (For more details on these video cards, see "Color Graphics in Bloom," April 1988.)

Although we've covered a lot of ground, we've only touched on the technicalities behind the Mac II's color capabilities. Its other talents include the ability to substitute a similar color when the one you want isn't in the current look-up table, and to keep track of multiple palettes and screens. This latter skill becomes vital when you have both a color and a monochrome monitor attached to a Mac II. In such cases, the Mac II must keep track of each monitor's color capabilities and adjust its displays accordingly—even when you position a window so that it spans a color screen and a monochrome one (see "Looking through the Mac II Kaleidoscope," *Macworld*, December 1987, and "Chasing Rainbows," *Macworld*, July 1987).

Pick a Color, Any Color

Another example of Apple's attention to color details is the method it provides for choosing and changing on-screen colors. Rather than allow application developers to design their own color-choosing schemes—which could result in dozens of different approaches—Apple incorporated into the Mac's system a standard way of changing colors called the *Color Wheel* dialog box, a method similar to those of the familiar Open and Save dialog boxes.

The Color Wheel dialog box consists of a colorful circle with a scroll bar alongside it and six text-entry boxes filled with numbers (see "Wheel of Color"). The easiest way to choose colors is to drag the mouse pointer within the wheel; as you do, the numbers on the left side of the dialog box change to reflect the internal recipe for the current color. To decrease a color's brightness, you use the scroll bar. You can also type values directly into the text-entry boxes; one reason for doing so would be to



Wheel of Color

The Color Wheel lets you choose colors by dragging the pointer within the wheel or by typing values in the text-entry boxes. The color swatch compares the current color to the original. Programs that support customized palettes use the Color Wheel to re-define colors.

precisely duplicate someone else's color choices.

The text boxes reflect the current color setting in two different ways, each corresponding to a different *model* for describing colors. In the *RGB* model, a color is described by the amount of red, green, and blue light it contains. In the *hue, saturation, and brightness* model, a color is described by its hue (its color, formed by a single primary color or a combination of primaries), its saturation (its purity, or the degree of gray present in the color), and its brightness (the degree of lightness from white to black). The models are interrelated; change a number in one set of boxes, and one or more values in the other set will change accordingly.

Understanding the hue, saturation, and brightness approach to color creation is easier if you pretend that the color wheel is cone-shaped, as in "Color Cone." The outer rim of the cone contains vivid, fully saturated colors. As brightness decreases, the cone gets narrower, since there are fewer discernable dark colors than there are bright ones. The cone's center axis always contains equal amounts of red, green, and blue, so it represents shades of gray ranging from white at the top of the cone to black at the bottom.

The color wheel, then, is simply a two-dimensional view of a three-dimensional (hue, saturation, and brightness) cone—it's as if you're looking at the cone from above. The wheel depicts the current color's hue and saturation, while the scroll bar to the right of the wheel represents the third dimension—brightness.

A Splash of Color

Enough of theory. What's it like to use a color Mac? In many ways, it's no different from using a monochrome one. Apple did a superb job of providing remarkable color features while retaining the Mac's easy-to-



Color Cone

Picturing the color wheel as a three-dimensional cone helps illustrate the concepts of hue (color), saturation (purity, or lack of dilution with white), and brightness or value (lack of dilution with black). The cone's outer rim shows fully saturated colors; as you move away from the rim, saturation decreases until you reach the center axis, which shows a complete absence of the original colors. As brightness decreases, the cone progresses from varying amounts of white at the top, through levels of gray, to black at the point.

use operating style. And it showed restraint in not using color for color's sake.

When the Finder first appears, don't expect to be dazzled. The Apple menu appears in color and a Color menu appears in the menu bar, but those are the only giveaways that you're using a color Mac. You'll find no colored menu bar or desktop pattern, no colored windows or scroll bars, no patches of brown rust on the trash can. Since color is such a powerful and highly subjective conveyer of information, Apple didn't want to overwhelm users with a rainbow of colors just because the Mac II can display them.

But it did provide some options for colorizing the Mac environment. The Control Panel's desktop pattern area lets you create colored desktop backgrounds. The Control Panel also offers an extension, or Control Panel device (cdev), named Color that lets you choose a different highlight color—the color used to indicate a selected icon or text passage. (For background on the modular Control Panel and its extensions, see "Getting Started with the New Mac System," *Macworld*, January 1988.) Finally, the Finder's Color menu offers another way to organize your files, by letting you assign any of eight colors to icons and folders. Then you can use the By Color command in the View menu to sort a disk's window according to the colors of its icons.

Colored desktops and icons are nice, but if you've just spent several thousand dollars on a Mac II and a color monitor, you might wish there were more ways to work color into your electronic desktop. There are, thanks to Kolor (a shareware cdev by Russ Wetmore) and Colorizer (by Palomar Software).

Colorizer includes a cdev called Colors that lets you add color to every element of the Mac's user interface, from windows and menus to scroll bars and buttons. It also offers many preset color combinations—like "Miami Vice," which turns your Mac into a palace of pastels, or "4th of July," which gives you a red, white, and blue workspace. Should you not share color preferences with Don Johnson or Ollie North, you can choose from over a dozen others or create your own. In addition, Colorizer not only lets you install color start-up screens, but it offers as well an application for adding color to MacDraw or any other PICT-format drawings and a screen-capture F-key that lets you commit full-

color screen shots to disk. At \$49, it's a package no Mac II owner should be without.

A Rainbow of Applications

Of course, you don't buy a color Mac just to have colored menus and scroll bars. Color adds a whole new dimension to electronic canvases and drafting tables, as well as to business and presentation graphics. (For an introduction to the color paint programs PixelPaint and Modern Artist, see "Live and in Color," February 1988.) Some programs can generate brilliant color slides by "printing" to specialized (and expensive) output devices called *film recorders* (see "Get to the Point," April 1988, for more on presentation graphics). Future products will let you specify colors using the Pantone Matching System (PMS), a standard method of color specification in the printing industry.

You'll also find color where you wouldn't expect it. Microsoft Excel version 1.5 allows color spreadsheets, and Ashton-Tate's dBase Mac database manager can display fields and records in color, too.

Equipped with a *gen-lock* expansion board, a Mac II can even send video signals directly into video equipment. The future is likely to see Mac IIs alongside million-dollar "paint boxes," creating on-air graphics and animation.

Color Me Compatible—Mostly

You might expect to find a raft of graphic incompatibilities between the Mac II and monochrome Macs, but there are surprisingly few. Color QuickDraw, which

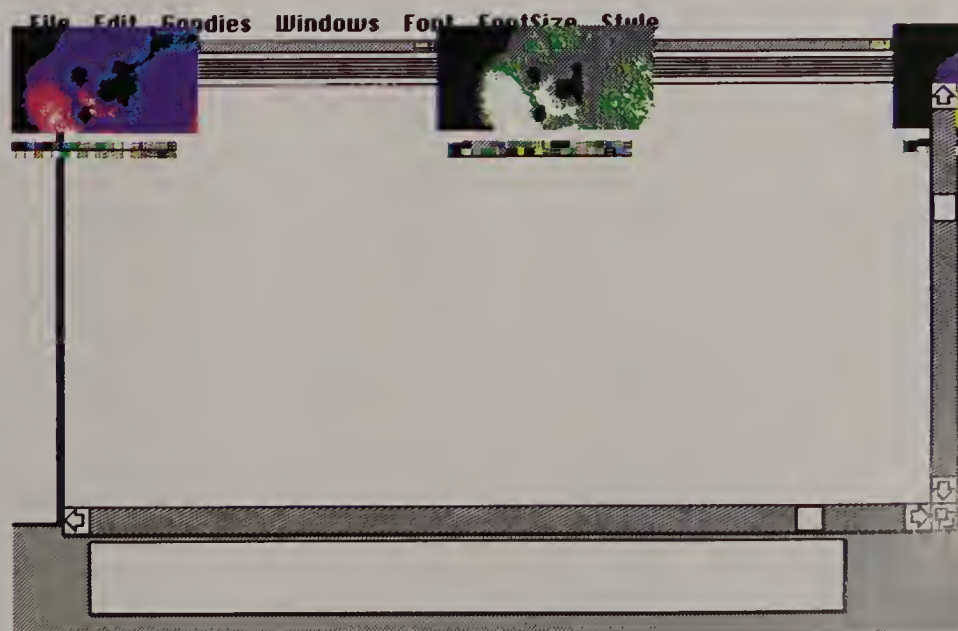
consists of the fundamental software routines responsible for the Mac II's color capabilities, works together with the latest version of the system files to keep the entire Macintosh family on good terms, graphically.

You can open a Color QuickDraw image on a monochrome Mac with System 4.1 or higher (previous versions would crash), but any color information that the original QuickDraw can't recognize will be discarded. On screen, whites will appear as white, but all other colors will look black. Because the original QuickDraw recognizes only 8 different hues—black, white, red, green, blue, yellow, magenta, and cyan—printing a glorious 256-color image from a Plus or an SE will yield only those 8 colors.

Of course, if you don't plan to move documents between Mac IIs and monochrome Macs, you won't run into this problem; if you're using a network and routinely shuttle documents between machines, though, beware. (Incidentally, for those SE owners anxious to enter the Mac color world, Orchid Technology now offers a 16-color display board for the SE called the ColorVue-SE for \$695, but a color monitor is also required.)

A slightly less troublesome glitch arises when you run some older Mac applications on a Mac II that's set up to display more than two colors: you're greeted by strange multiple images (see "Problem Palettes"). That's because the application's developer, rather than use the Mac's Toolbox

(continues)



Problem Palettes

The multiple images in this FullPaint display are caused by the application's mistaken assumption that it's running on a 1-bit-per-pixel Mac rather than a Mac II set for multiple bits per pixel. You can fix the problem by switching the Control Panel's Monitors extension to 2 Colors.

How To/Getting Started



Flexible Faces

These faces drawn in Adobe Illustrator 88 make use of the program's blending tool, which allows gradations in shape, line, or color.

routines, chose to violate Apple's programming guidelines by accessing the Mac's video memory directly—all for the sake of faster performance. Older applications that commit this sin assume they're running on a monochrome Mac, which uses only one

bit per pixel. When these applications fiddle with the Mac II's video memory, they access multiple bits per pixel, and therefore draw a separate small image for each bit. This problem surfaces with two popular graphics programs, FullPaint version 1.1 and SuperPaint version 1.0.

The solution is to use the Control Panel's Monitors extension to switch to two colors. That's an easy fix, but it can be inconvenient if you use MultiFinder, since it prevents you from simultaneously running other applications that require a more colorful Monitors setting.

Upping the Color Ante

Other gray areas exist in the world of Macintosh color. One problem is a dearth of color printers, especially ones capable of doing justice to the Mac II's talents. Selling for \$1395, Hewlett-Packard's 180-dots-per-inch (dpi) PaintJet looks promising, as does Shinko's 200-dpi thermal printer (\$4500). Some 300-dpi printers should be available this year, but expect their prices to be in the five-figure ballpark.

The high cost of color surfaces everywhere you look. An AppleColor monitor plus a fully expanded Mac II video board will set you back nearly \$2000. Neither is

very useful without a Mac II, so tack on an extra \$3800 just for a basic floppy-disk system. (If you plan to create full-page color images, add at least \$650 for a hard disk.)

So just because you're buying a Mac II, don't think you have to include a color monitor and a fully expanded video board. Color displays are beautiful, but they don't render text as sharply as monochrome ones do. And the extra processing time required to work with 256 simultaneous colors slows the Mac II's performance. Speed and expandability are far better reasons to buy Apple's newest Mac.

Of course, take my advice with a grain of salt. I took the Mac II color path—monitor and video board—even though I spend most of my time gazing at text. Why didn't I go the less-expensive monochrome route? Well, the excuse I gave my accountant—and she knows who she is—was that I need a color system to test and write about color software.

That's what you really need to buy a color Mac—a good excuse. □

See *Where to Buy* for contact information.

WE LISTENED.

YOU wanted a **SUPER POWERFUL** TEXT DATABASE MANAGER AND MACRO EDITOR for your Macintosh™. One that would do things with **text** a word processor CAN'T! **QUED/M** was the answer.

It has more than 50 common macros, allows wild characters, can jump to any line number or invisible marker and search and/or replace through unopened files. It also automatically checks for errors (like closing parens), has unlimited undoes and can assign a command key to any of 70 menu items. And, those are just a few of the features...

QUEDM™ IS HERE.



THIS IS THE PRODUCT YOU WANTED. THE indispensable productivity tool with features no other product has!

**ONLY
\$119**

Requires 512K

Send for free info today!
BUY DIRECT OR FROM YOUR LOCAL DEALER.



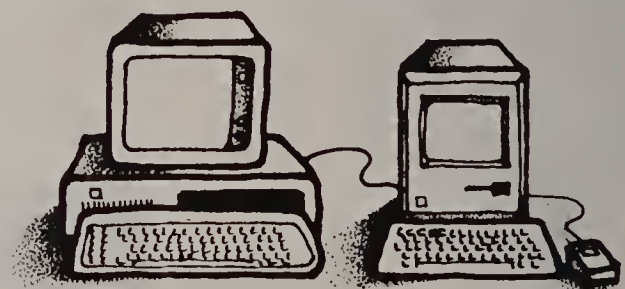
**PARAGON
concepts, inc.**

4954 Sun Valley Road
Del Mar, CA 92014-9923
(619) 481-1477
Outside CA (800) 922-2993

Macintosh is a trademark of Apple Computer, Inc. QUED/M is a trademark of Paragon Concepts, Inc.

Circle 253 on reader service card

Are you suffering from the "lonely Mac in a PC office" syndrome?



Connect with QuickShare!

QuickShare gives you access to the PC world with **blazingly fast** SCSI file transfer, **universal** PC to Macintosh document and graphics translation, and **cost effective** PC resource sharing.

"No other package offers the speed, reach and versatility . . ."

Paul Kerr, MacWeek Magazine Product Review

QuickShare's translation capabilities are "a stroke of genius."

Kevin Strehlo, Business Software Magazine

The QuickShare package includes a complete hardware and software system to get your Macintosh connected.

Call now for more information: **800-356-0283**

Compatible Systems Corporation

P.O. Drawer 17220, Boulder, Colorado 80308
303-444-9532, Telex 249643

Circle 84 on reader service card

The VT600's resolution of six hundred dots per inch insures smooth curves and sharp detail both at large sizes and in small text—as shown in this block of eight-point copy.

See it in our fine print . . .

At 300 dpi, hairline strokes and delicate serifs—the hallmarks of certain typestyles—are either sacrificed or distorted. At small sizes, 300-dpi characters such as these begin to fill in. At large sizes, character edges can appear decidedly ragged.

. . . and in the quality of our smooth headlines and crisp illustrations. Until now, you've had to choose between the cost savings and convenience of plain-paper output and the high quality obtained from phototypesetting.

The VT600 eliminates the trade-offs. With an imaging resolution of 600 x 600 dots per inch, a VT600 produces camera-ready typeset text and graphics on plain paper, right in your office. Because VT600 images contain four times the information of 300 dpi output, all the subtleties of graphics and text are reproduced with exceptional fidelity. The VT600—a breakthrough for electronic publishing.



PostScript compatibility—the VT600 plain-paper typesetter is plug-compatible with your existing front-end PostScript applications.

Up to 150 typestyles on disk—for increased system performance, flexibility and efficiency.

Up to 10 prints per minute can be generated by the VT600—as much as six times faster than other laser printers for certain applications.

Low cost per print—one-third the cost of phototypesetting.

The convenience of plain-paper imaging—immediate results without chemical processing.

Designed for the office—attractive packaging, silent operation, very small footprint.

For complete information call 800 631-8134; in New Jersey call 201 887-8000, ext 999.



The VT600 . . . advancing the state of the art of laser printers while preserving high aesthetic standards for type and graphics.

©1987 AM International, Inc.
Varityper is a registered trademark, VT600 is a trademark of AM International, Inc. Line Art created with Adobe Illustrator. PostScript and Adobe Illustrator are trademarks of Adobe Systems Inc.

A division of
AM International

Circle 93 on reader service card

Macintosh Plus Entry System

System includes

- Macintosh Plus Computer with 1 Megabyte of Ram
- Keyboard and Mouse
- 1 Internal 800K Floppy Drive
- Cutting Edge 800X External Floppy Drive
- Imagewriter II Printer
- Printer Cable
- HyperCard Software
- Maxell Diskettes Box of 10
- Computer Paper Package of 500
- Dust Cover for Macintosh Plus
- Dust Cover for ImageWriter II
- Head Cleaning Kit
- Mouse Pad

Suggested list price \$3450

CDA Price \$2149

When ordering specify package #8801

Macintosh SE Super System

Complete System includes:

- Macintosh SE Computer with 2 Internal 800K Drives
- 1 Megabyte of Memory
- Keyboard and Mouse
- Imagewriter II Printer
- Imagewriter Cable
- Mouse Pad
- HyperCard Software
- Maxell Diskettes Box of 10
- Dust Cover for the Macintosh SE
- Dust Cover for the Imagewriter II
- Head Cleaning Kit

Suggested List Price \$3689

CDA Price \$2749

When Ordering Specify Package #8802

Macintosh SE/20 Super System

Same as the above system but includes the Macintosh SE with built in 20 megabyte hard disk and 1 internal 800K floppy!

Suggested List Price \$4489

CDA Price \$3349

When ordering specify package #8803

Macintosh II/40 Graphic System

Complete System includes:

- Macintosh II Computer with 40 Megabyte Hard Drive
- 1 Megabyte of Memory
- Extended Keyboard and Mouse
- Macintosh II Video Card
- Apple Color High Resolution RGB Monitor
- Imagewriter II with cable
- Mouse Pad
- HyperCard Software
- Maxell Diskettes Box of 10
- Case of Computer Paper 1100 Sheets
- Dust Cover for Macintosh II/Monitor
- Dust Cover for the Extended Keyboard
- Head Cleaning Kit

Suggested List Price \$7849

CDA Price \$5999

When ordering specify package #8805.

Above system with 20 Megabyte Hard Disk specify package #8804

CDA Price \$5399

Above system with 80 Megabyte Hard Disk specify package #8806

CDA Price \$6999

Complete Ready-to-Run Systems, no missing parts or cables, we guarantee it!. If these systems do not meet your needs please call and we will design a system to meet your specific needs.

Monthly Specials

Rodime 20 Plus External Drive

Manufactures close-out on beige cases only-20 megabyte fits neatly under MacPlus or MacSE **Only \$599** (Limited Quantities)

NEC LC-890 Laserwriter

Postscript printer prints at 8 pages per minute - 3 Megabytes of memory **Only \$3499**

Macintosh Accessories

Abeton
PowerPoint \$119

Apple
Macintosh Plus 1649
Apple 3.5 Drive 319
Macintosh SE w/keyboard 2199
Macintosh SE20 w/keyboard 2849
Apple Extended Keyboard 199

Bose
Roommate II Speakers 229

Central Point
800K Drive 185

Dove
MacSnap SCSI (Mac 512) 85

Cutting Edge
800K Drive 179

DataDesk
DataDesk 101 Keyboard/ABD 135
DataDesk 101 Keyboard/Plus 135
HyperDialer 26

Kensington
SystemSaver Mac 69
Turbo Mouse 512/Plus 89

MacTilt/Swivel
Printer Muffler 80 49
Anti-Glare Screen 35

Lightgate
Felix 99

MacMemory Inc
Turbo SE 395

Olduvai
ADBridge 105

Macintosh II Hardware

Macintosh II with ext. Keyboard 3149
Macintosh II 40 with ext. Keyboard 4399
Mac II Video Display Adaptor 399

Mac II Video Expansion Kit 99
Mac II Monochrome Monitor 329

Mac II RGB Monitor 799
PC 5.25 Drive 329

Mac II Drive Card 109

AST Research
AST Mac 286 1079
AST Mac 86 429

Monitors

Cornerstone Technologies
19" Monochrome (MacII) 1899

E-Machines
Big Picture (512, Plus, SE, Mac II) 1595
Big Picture IQ 2349

Sigma Designs

Laserview 15" Mono (SE/Mac II) 1365
Laserview 19" Mono (SE/Mac II) 1799

Sony
Multiscan RGB Analog 1302 (II) 749

SuperMac
Super View (HiRes Mono Card/SE) 379

Graphix (HiRes Mono Card/II) 379
19" Monochrome Monitor 1288

Super Spectrum Color Card 1149
19" Color Monitor 2395

19" Color Trinitron 2945

16" Color Trinitron 2049

Printers

(pricing includes cables)
Apple Imagewriter II 479

Apple Imagewriter Sheetfeeder 179
Apple Imagewriter LQ 1099

Apple Laserwriter II SC 2249
Apple Laserwriter II NT 3699

Apple Laserwriter II NTX 5295
AST TurboLaser PS 3595

Orange Grappler Mac 79
Orange Grappler Mac LQ 89

NEC LC-890 3695

Modems and Communications

Pricing includes Modem Cable
Apple
Apple personal Modem 319

Epic
Internal 2400 Baud for Mac II 319
Internal 2400 Baud for Mac SE 319

Exerex
EMAC 2400 249

Prometheus
Promodem 1200 Expandable 249

Promodem 1200 Non-Exp 179
Promodem 2400 Expandable 349

Promodem 2400 non-Exp 289
Mac Pac ProCom 39

Mignet
Pocket Modem 1200 169

Modem Cables
Macintosh 128/512 19
Macintosh Plus/SE/II 19

Memory Upgrades

Upgrade your memory starved Mac...
Apple
1 Megabyte Upgrade (4 256K SIMM Modules) 209

2 Megabyte Upgrade (2 1 Meg SIMM Modules) 599

4 Megabyte Upgrade (4 1 Meg SIMM Modules) 1198

Dove
Mac Snap 524 (Mac 512) 149

Mac Snap 524S (Mac 512E) 219
Mac Snap 548E (Mac 512E) 369

Mac Snap 548S (Mac 512E) 439
Mac Snap Plus 2 (Mac Plus) 269

Mac Snap 2S cmos 469
Mac Snap 4S cmos 949

Mac Snap 8S cmos 1879

Hard Drives

CMS
20 Megabyte MacStack 579
43 Megabyte MacStack 799

60 Megabyte MacStack 849
80 Megabyte MacStack 1295

102 Megabyte MacStack 1395
140 Megabyte MacStack 1495

60 Megabyte TapeStack 769

Everex
E-MAC 20D 529
E-MAC 20 Deluxe 595

E-MAC 40 D 975
E-MAC 40 Deluxe 1049

E-MAC 40/60DT 1849

PCP
MacBottom 21 Meg 749
MacBottom 32 Meg 899

MacBottom 45 Meg 1159
MacBottom 20 w/modem 899

MacBottom 32 w/modem 1049
MacBottom 45 w/modem 1299

SuperMac
Dataframe XP30 899
Dataframe XP60 1299

Dataframe XP60-40 Tape 1849

Rodime
20 Plus 739
45 Plus 1139

Internal Hard Drives/Mac II

CMS
Pro 20 Mac II (65 ms) 499
Pro 43 Mac II (40 ms) 699

Pro 45 Mac II (28 ms) 799
Pro 60 Mac II (40 ms) 749

Pro 80 Mac II (26 ms) 1195
Pro 102 Mac II (28 ms) 1295

Pro 140 Mac II (28 ms) 1395
Pro 150 Mac II (16.5 ms) 1895

Pro 300 Mac II (16.5 ms) 2875

PCPC
MacBottom HD144 2189

Internal Hard Drives/Mac SE

CMS
Pro 20 MacSE (85 ms)* 499
Pro 45 MacSE (28 ms)* 695

Pro 100 MacSE (25ms)* 1495

*Available in two models—
model i — replaces one of the two SE
floppy drives

model r — mounts inside but allows you to
keep both floppy drives!!

Scanners & Scanning Devices

AST
TurboScan 1695

Microtek
MS 300A 1995
MS 300C 1319

MSF 300G 2695
MSF300C 1479

Scanner SCSI Option 145
Thunderware
Thunderscan 199

Order Toll Free 800-526-5313

In NJ/Out of U.S.A. 201-832-9004

*VISA *MASTERCARD *AMERICAN EXPRESS *DISCOVER *OPTIMA*
No Sales Tax Collected (NJ Residents add 6%)

Mail Order Worldwide / Buy with Confidence

No-Risk 30-Day Satisfaction Guarantee—If you're not 100% satisfied with any Hardware or Accessories purchased from CDA Computer Sales, we will refund the purchase price 100%! (Software excluded.)

Free Technical Support Hotline—We support our customers with knowledgeable technicians trained on all products we sell.

Warranty—On top of the manufacturer's warranty, we offer a 30-day defective exchange policy—if hardware or accessory fails in the first 30 days we will replace that item with a brand new product.

Apple Product—We are not an authorized Apple dealer, therefore during the 90-day warranty period the product must be returned to CDA for warranty repair.

Shipping Charges—UPS Ground Shipping, add 2% (\$3.50 minimum); UPS Blue Service, add 5% (\$5.50 minimum); APO/FPO Shipping, add 4% (\$4.50 minimum); Alaska, Hawaii, Puerto Rico and Canada, add 6% (\$6.50 minimum). Foreign Orders, please call.

Payment—Major Credit Cards Accepted at no additional charge! Cashier Checks and Money Orders shipped promptly; personal checks are held 10 days for clearing. NO COD's please. Prices are subject to change.

Apple is a registered Trademark of Apple Inc.
IBM is a registered Trademark of International Business Machines.
Macintosh is a registered Trademark of Apple Inc.

CDA Computer Sales

One CDA Plaza, PO Box 533, Califon, NJ 07830

New Expanded Hours

Monday thru Friday 9 to 10 EST / Saturday 9-5 EST

Order by Phone, Mail or even over

Compuserve's Electronic Mall (GO CDA)

Customer Service 201-832-9007

FAX Number 201-832-9740

Insights on WriteNow

Tips and techniques for better word processing

by Robert C. Eckhardt

MacWrite and Microsoft Word devotees may be surprised to learn that WriteNow currently rates as the second or third most popular Macintosh word processor (depending on your source). While not as powerful as Word 3.01, WriteNow is easier to use. And it contains many improvements over MacWrite 4.5: greater speed, a spelling checker, better line-spacing control, better graphics handling, and so on.

For WriteNow owners who have yet to learn all the fine points of their word processor, here are some tips that should make WriteNow a little more useful. Even those who consider themselves WriteNow experts will, I hope, find a few new and handy techniques in the following pages.

My thanks to Julie Wilson and Andy Jeffrey at T/Maker, Bob Bowen of the University of Washington School of Business, and Marcel Mendoza and Alan Harper for help in putting this collection together.

Upgrade to Version 2.00

By the end of spring 1988, WriteNow 2.00 probably will have been released. According to its manufacturer, T/Maker, this new version will answer many of WriteNow's critics by adding decimal tabs, a Window menu, built-in export and import file conversions, and cursor-key support, among other things.

If you neglected to return your registration card, or have yet to hear from T/Maker about the upgrade, call the company at 415/962-0195.

Except where noted, all of the tips that follow apply to both WriteNow 2.00 and its predecessor, version 1.07.

Memory Miser

If you have yet to upgrade your Macintosh to 2 megabytes or more of RAM, you



MICHAEL L. ABRAMSON

Larry Moran, a training coordinator with the Chicago Transit Authority, uses WriteNow on his Mac at home to develop CTA proposals, training materials, and the standard operating procedures that help the system run safely.

can take advantage of MultiFinder to run two applications at once if one is WriteNow (and the other is not a memory hog). Version 1.07 of WriteNow can fit inside a 128K partition of MultiFinder, although I would not recommend squeezing the spelling checker into such cramped quarters. At press time it was not clear if version 2.00 would fit in 128K, but according to T/Maker it will certainly fit in a 256K partition. For both versions, the recommended minimum partition when you want to include the spelling checker is 256K.

Document Conversions

WriteNow 1.07 owners complain about the program's inability to open or save files in text-only, MacWrite, or Microsoft Word format. If you are still using WriteNow 1.07, there are ways to minimize this inconvenience. Try beginning your WriteNow work session by launching WriteNow's Translator program and converting all the non-WriteNow documents you'll need, en masse. Then use Translator's Transfer To WriteNow command to go directly to WriteNow.

For those who would rather convert documents as they work, there's the share-

ware TranslatorDA by Edward L. Bolson, which lets you convert a text-only document to WriteNow format, or a WriteNow document to text-only or MacWrite 4.5 format.

Finally, for text-only documents, you don't need to use Translator or TranslatorDA. When running under MultiFinder, all you need to do is launch another word processor or text editor, open the document, copy the contents of the document to the Clipboard, switch back to WriteNow, and then paste the Clipboard contents into a new WriteNow document. Keep in mind, however, that you lose all formatting and graphics during a transfer such as this.

(continues)

Robert C. Eckhardt is a contributing editor and the author of Free (and Almost Free) Software for the Macintosh (Crown Publishers, 1987) and The Fully Powered Macintosh (Brady Books, 1988).

Counting Words

Tired of having to estimate the word count of your documents, or of using your stand-alone spelling checker to do the job? Well, there's an easier way. It's MultiCounter, a shareware desk accessory by Andrew E. Page. The program displays the number of characters, words, and sentences, and the average number of words per sentence. To get an accurate count of any document currently displayed on the screen, be sure to save it immediately before counting.

Checking Spelling from Memory

If you can't make room for WriteNow's dictionary file on either your start-up or application disk, use the Load Dictionary button in the Check Spelling window to load the dictionary from another disk. If you might check for misspellings again later, don't close the Check Spelling window when you are done. By keeping the Check Spelling window open, the dictionary remains in memory so you don't have to load it again for subsequent spelling checks. Just move the Check Spelling window down to uncover the ruler, bring your document window(s) to the front, and continue working. Also, be sure to keep at least one document window open at all times—closing all documents automatically closes the Check Spelling window.

Quick Dictionary Updates

To efficiently customize WriteNow's dictionary, select a block of correctly spelled text and then click on the Check Spelling window's Learn button. The dictionary then adds all the selected words it doesn't already know. Watch out that you don't add misspelled words by using this technique carelessly. You can Forget in bulk too, but be careful not to delete common words such as *and* or *the*.

Creating a Custom Dictionary

If your writing uses a highly specialized vocabulary, such as medical or legal jargon, or if you need a foreign dictionary to check letters to your European business partners, you can create your own custom dictionaries from scratch. To do so you'll need the Empty Dictionary file (available from CompuServe and elsewhere), a file in WriteNow dictionary format but devoid of any entries. Use the bulk additions tech-

nique to get the dictionary started, then add other words one by one as they come up—it doesn't take long to create a dictionary of the words you use regularly. Change the name of the file to French Dictionary or Legal Dictionary and load it with the Load Dictionary button in the Check Spelling window when you need it. Or, if you want to use this new dictionary all the time, name it Dictionary and then substitute it for WriteNow's dictionary file on your start-up or application disk.

Page Wrap Factor?

If you've ever attempted to comprehend the Page Wrap Factor explanation in the WriteNow manual, you'll know that it's a futile exercise. But even if you have no idea how it works, the Page Wrap Factor has at least one practical use. It determines the space between body text and headers and footers. If, after deleting the empty lines in a header, the body text and header remain too far apart, open the Page Setup dialog box and enter a smaller number for the Page Wrap Factor. Reducing the Page Wrap Factor by 9 points eliminates 1/8 inch of space. Of course, increase the number if you want more space.

Search-and-Replace with Formatting

The Find/Replace command normally inserts your substitute text in the same font, size, and style as the text it replaces. Here's a way to replace with a different font or style—for example, to insert Symbol font characters into Palatino text. Type the characters you want to insert in the correct font, size, and style. Select them and copy them to the Clipboard. Select the Find command, enter the characters to be replaced in the Find Text box, and then click on the document window to send the Find window to the back—do not close the Find window. Now press ⌘-F. Once the item is found and highlighted, press ⌘-V to replace it with the contents of the Clipboard. Press ⌘-F again to locate the next occurrence, and repeat.

Aligning PICT Graphics

If MacDraw-format (PICT) graphics containing both text and graphics misalign when they print in WriteNow documents, the culprit may be the Use Printer Spacing option. Try opening the Page Setup dialog box and toggling Use Printer Spacing.

1. Select the first word of the type style that you want to change.

Stephen Dedalus as **Telemachus**
Leopold Bloom as *Ulysses*
Mrs. Bloom as *Penelope*
Blazes Boylan as *Antinous* (The Leading Suitor)

2. Extend selection, hold down Shift key, and switch type styles.

Stephen Dedalus as *Telemachus*
Leopold Bloom as *Ulysses*
Mrs. Bloom as *Penelope*
Blazes Boylan as *Antinous* (The Leading Suitor)

3. Voilà. Only the bold words have changed to italic.

Stephen Dedalus as *Telemachus*
Leopold Bloom as *Ulysses*
Mrs. Bloom as *Penelope*
Blazes Boylan as *Antinous* (The Leading Suitor)

Shift-Change Sequence

Shifting is the key to global changes in WriteNow. Follow the instructions in the figure to change all words in the same type style. To change all rulers with identical settings, hold down the Shift key while changing one of the rulers.

Shifty Global Changes

WriteNow includes a powerful but somewhat arcane way of changing all text that shares the same font, size, or style, or all rulers with matching settings. I call it the Shift-change technique because you make these global modifications by pressing the Shift key as you make a change. For example, to change all bold italic text to plain italic, select the first bold italic word in a document and then extend the selection to the end of the document (scroll to the end, press Shift, and then click). Press the Shift key as you select the Bold command to toggle off the boldface and make the words italic (see "Shift-Change Sequence").

Stylesheets, Almost

Although WriteNow doesn't have stylesheets, you can create a homemade equivalent with ruler documents. Before working on a complex document, decide how you want it to be formatted. Then create a series of ruler documents, each containing only a single ruler formatted for an element

(continues)

DaynaFile. The Search For IBM PC File Compatibility Is Over.

Tired of hacking through the jungles of MS-DOS in search of data file compatibility for your Macintosh™? Or fighting a tangle of networks, cables, and add-on cards, just to edit a simple file?

Discover DaynaFile,™ the simple, practical solution to IBM PC file compatibility.

DaynaFile is an external disk drive that lets your Macintosh read from and write to a DOS-formatted data disk.

A SCSI port connects it to the entire family of Macintosh computers from the Macintosh Plus to the SE and Macintosh II, without an add-on card.

Imagine what that means. With a simple disk drive, you can now access thousands of IBM data files created by programs such as Lotus 1-2-3,™ dBase III,™ WordPerfect™ and AutoCAD™—with the ease of Macintosh. Just point and click.

And, as a single or dual-drive unit, DaynaFile can handle all the IBM personal computer file formats you have to deal with, in both 5¼" and 3½" disks.

That's the compatibility you've been hunting for.

So call us today. And call off the search.

(801) 531-0203



Dayna

Power Tools For The Mind

Circle 232 on reader service card

Dayna is a registered trademark of Dayna Communications, Inc. Macintosh is a trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corp. Lotus 1-2-3 is a trademark of Lotus Development Corp. dBase III is a trademark of Ashton Tate. WordPerfect is a trademark of WordPerfect, Inc. PC XT AT, and PS/2 are trademarks of International Business Machines. AutoCAD is a trademark of Autodesk, Inc.

DATA ACQUISITION ON THE MACINTOSH

Advanced hardware and software solutions for all Macintosh computers.



FREE CATALOG

Write, or call to talk to a GW Engineer

617-625-4096



GW Instruments, Inc.

P.O. Box 2145 • Cambridge, MA 02141

The Macintosh Data Acquisition Company

How To/Insights

in your writing document—one for a standard paragraph, one for a section head, one for an equation, one for a bibliographic entry, and so on. Name each document accordingly and keep them all open. Then start writing; any time you need a different format, instead of changing the ruler by hand, go to the appropriate ruler document. In version 1.07, you can cycle through open windows by pressing \mathbb{H} -= repeatedly; in version 2.00, you can also select the appropriate document from the Window menu. Copy the desired ruler by pressing \mathbb{H} -1, return to the writing document (again using \mathbb{H} -= or the Window menu), and paste the ruler using \mathbb{H} -2.

If your writing document contains different types of paragraphs with the same ruler format (such as section heads and subheads that differ only in font size), create unique ruler documents for them anyway. For example, put a tab way out in the right margin—where it doesn't affect formatting—in a different position on each ruler. With unique rulers for each format, you can use the Shift-change technique to change all the rulers for a specific element throughout a document—for example, to switch all second-level headings from flush left to centered.

Adjustable Paragraph Spacing

In a similar vein, create a ruler for the space between paragraphs to make adjusting interparagraph spacing easy. To do so, select the Return character (visible when Show Space is turned on) after the first paragraph of your document, bring up the ruler, format it in some way to distinguish it from other rulers, and set the between-paragraph spacing. Copy the ruler to the Clipboard; also store it in a ruler document for safekeeping. As you write, paste the ruler from the Clipboard after each paragraph as you go. This adds tedium to the writing process; though it might be impractical for those who edit as they write, should you need to change interparagraph spacing from, say, 6 to 20 points throughout the document to make it fit your format, you can do so easily using the Shift-change technique.

Switching Printers without Unwanted Changes

If you switch between ImageWriter and LaserWriter, be sure to select the Tall Adjusted option in the ImageWriter Page Setup dialog box before you proof page breaks and other final copy details. If you do not, formatting may change as you switch from one printer to the other, and thus may require some work to get it back in line. Under Tall Adjusted, most formatting details such as page breaks, line breaks, and margins remain constant for both ImageWriter and LaserWriter.

Stationery Shortcuts

A handy but often neglected feature of WriteNow is the Stationery document. If you create a file with the margins, font, font size, leading, and other formatting you prefer and save it under the name Stationery, all new documents open with those settings. There's only one glitch in the Stationery technique: if you subsequently change fonts in the System file, WriteNow alerts you to that fact every time you open a new document. To silence this annoying message, open the Stationery document (with the Open command, not the New command), save it, and close it.

In WriteNow 2.00, if you want to bypass the Stationery file and open a new document in standard WriteNow format, hold down the Option key when you select the New command from the File menu, or when you launch WriteNow.

Avoiding Unprintables

In addition to displaying spaces, tabs, returns, page breaks, and other nonprinting characters, the Show Space command can determine in advance if parts of a document extend beyond the area of the page that the printer can print on. Be sure the type of printer you intend to use is selected in the Chooser and displayed in the Page Setup dialog box. Select Show Space from the View menu and move both scroll bars to see if any part of the document extends beyond the dotted rectangle that frames the printing area of the page (see "Stay in the Printing Area"). To keep everything within the printing area, use binding or ruler margins to pull text in from the sides and adjust headers and footers to add more blank space at the top and bottom of the page.

(continues)

Circle 124 on reader service card

How to Buy the Right Monitor

Let's cut through the hype and misinformation about large-screen monitors for desktop publishing. At Moniterm, we developed the first large-screen monochrome monitors. And based on 9 years of OEM experience, we've now built a family of large-screen, hi-res monitors for every application.

What size and shape monitor is best?

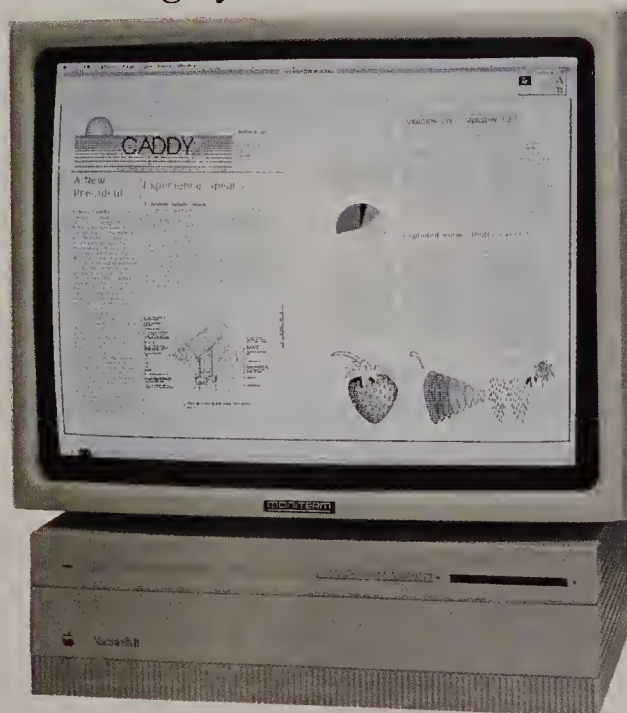
Page-size portrait monitors are great for word processing, but impractical for desktop publishing. To avoid constant zooming and scrolling, we recommend a 19-inch landscape monitor, like our Viking 1 for the Mac SE and Mac II. Professionals who want to view two *full-size* facing pages will need an even larger monitor—our new 24-inch Viking 2400—Moniterm's largest monochrome monitor.

What resolution is required?

Optimum publishing resolution for 19-inch or larger monitors is 1280x960 pixels, featured on our Viking 1 and Viking 2400 monitors. At less than 72 dpi (dots per inch), fine print becomes too hard to read. Resolutions more than 95 dpi also make characters hard to read and unfocused. And screen updates are painfully slow.

Should I get a monochrome or color monitor?

We recommend our 19-inch gray-scale monitor for



Viking 2400 24" monitor.

differentiating objects on the screen. It features 256 shades of gray for near-photorealistic images. And, you'll benefit from sharper text and lower cost.



For previewing spot color and creating desktop presentations, the Viking 10 19-inch color monitor offers flicker-free, totally sharp color images.

Get the facts from the source.

Those are just a few of the many tough questions people are asking about large-screen monitors. We've got the answers. Write or call us for your free copy of our informative booklet, *How to Buy the Right Monitor*. It includes simple tests you can perform to check for flicker, refresh rate, screen update speed, readability, glare, ease of use, and other critical factors in large-screen monitor performance—*before you buy!*



Yes! Send me a *free* copy of HOW TO BUY THE RIGHT MONITOR. I am interested in ☐ monochrome 19" ☐ monochrome 24" ☐ color 19" ☐ gray scale 19" monitor(s) for desktop publishing!

Name _____

Title _____

Company _____

Address _____

City, State, Zip _____

Telephone _____

Please Check:

- ☐ Apple User
☐ IBM User
 No. of micro-computers _____
☐ Apple Reseller
☐ IBM Reseller

MONITERM

5740 Green Circle Drive
 Minnetonka, MN 55343

(612) 935-4151

Fax # (612) 933-5701

Telex #753626

Circle 133 on reader service card





\$-SAVING RIBBON INKERS

Now you can re-ink fabric ribbons again and again! This product pays for itself. FREE 4-oz. of black ink.

IMAGEWRITER PRINTER INKER \$49.00
EPSON PRINTER INKER \$52.95



\$29.95 PRINTER SILENCER

Reduce irritating printer noise up to 90%! Attractive wood grain finish, 200 lb. test corrugated cdb. Ideal for light and medium use of printers up to 17.5" x 13" x 5.5".



HI-CAPACITY, LOW-COST DISK ORGANIZERS

Hi-gloss white or wood grain finish. Sturdy 200 lb. test corrugated cdb. Styles hold 50 or 100 disks—5 1/4", 3 1/2" or C.D. Priced \$3.49-\$7.45

MACINTOSH CLIP ART SOFTWARE

Call for FREE illustrated catalog with many more items.

CALL 24 HOURS TO ORDER
800-772-4536

IN OHIO 216-631-4214 • FAX 216-631-1452

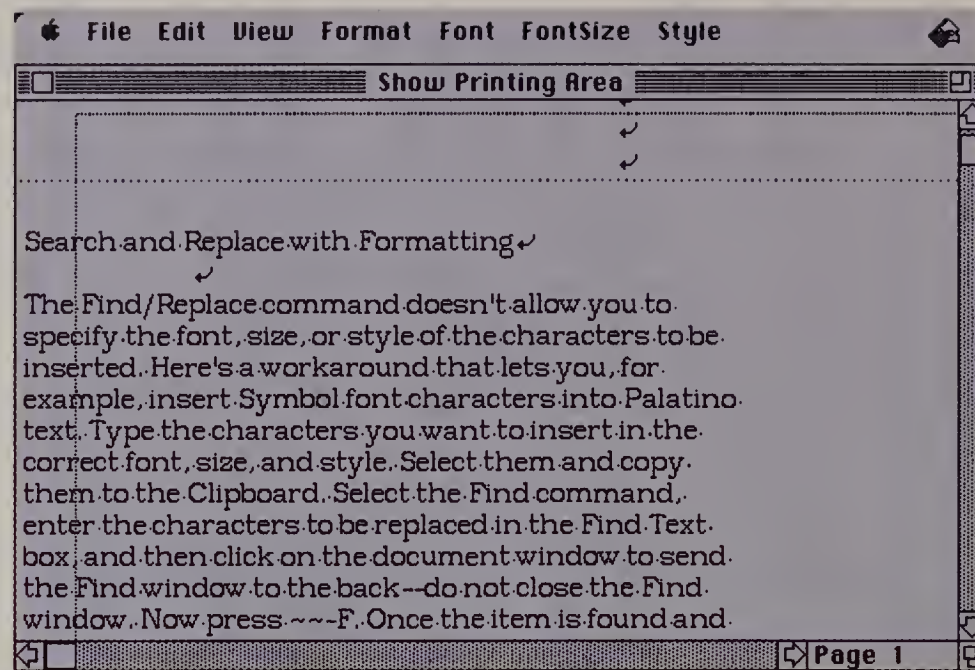


bede tech™

Division, Bede Industries, Inc.
Established 1976 MW5

8327 Clinton Rd. • Cleveland, OH 44144

Circle 9 on reader service card



Stay in the Printing Area

Selecting Show Space from the View menu lets you know if your text overflows the image area for your printer, indicated by the dotted rectangle. Here, the text goes too far to the left; we need to move the left text margin in to keep the words within the printing area.

Headers and Footers

Headers and footers in WriteNow follow the greatest common denominator rule: all of them take the same amount of space as the largest header or footer in the document. Thus, to avoid oversize headers on subsequent pages of your correspondence, resist the temptation to put your letterhead in the first page header. Instead, place it in the first line of your document.

Here's an easy shortcut for opening a header or footer for editing: double-click in the header or footer area of the main document window to open the header/footer window. If you have yet to create a header or footer window, version 1.07 tells you to do so. Version 2.00, however, asks if you want one created for you. Click Yes and the header/footer window opens.

Faster Scrolling

You can speed up scrolling in illustration-laden documents in version 2.00 by selecting the Hide Pictures command. The pictures will print as usual, but on the screen WriteNow displays a gray box in place of each graphic. Each box adopts the size of the picture it replaces, so line breaks and page breaks don't alter.

Outlining with Acta

Probably the most convenient outliner to use in conjunction with WriteNow is the desk accessory Acta 2.0. This new version of the DA contains a WriteNow translator that saves Acta outlines, complete with outline numbering and indentation, in standard WriteNow file format. As a result, reformatting an outline back in WriteNow is easy. Since each outline level has a

unique ruler, you can make document-wide changes to the ruler settings for individual heading levels using the Shift-change technique.

Adding Equations

WriteNow lacks the mathematical typesetting capabilities of Microsoft Word, but you can easily add sophisticated math typesetting to WriteNow by using an equation editor such as The Expressionist or MathWriter. Equations created in editors such as these are simply imported into WriteNow via the Clipboard and pasted into your document.

If the equation is embedded in a line of text, you may need to lower the equation so that it more or less aligns with the text on either side. To do so, select the equation, then select Subscript from the Style menu (or press ⌘-L) a few times to bring the equation into line.

A long equation or a display equation goes on a line of its own. Set the position of left-aligned equations with the left margin on the equation ruler. To center an equation, place a tab in front of the equation and set a centered tab on the ruler. Use a right tab at the right margin to position the equation number. Finally, select the equation and subscript it till it aligns with the equation number in the right margin. □

See *Where to Buy* for contact information.



LM-301
with
PG-1600



LM-300
with
LaserPage

KEY SPECS

- 1600 x 1200 Resolution
- 150 DPI, 15" Diagonal
- Price—\$839.00 - LM-301
\$750.00 - PG-1600

- 1200 x 1664 Resolution
- 150 DPI, 15" Diagonal
- Price—\$839.00 - LM-300
\$750.00 - LaserPage

WORKS WITH

CGA/MDA
HARDWARE EMULATION

Dr. HALO II™

PageMaker
1.0A

Ventura
Publisher
1.1

THE
OFFICE
PUBLISHER
1.0

WordPerfect
4.2

AUTOCAD®
2.1

PC PAINTBRUSH
plus 1.0

PUBLISHERS
PAINTBRUSH
1.03

WINDOWS
1.04/2.03

WORDSTAR

GEM
Desktop 2.1

1-2-3
1A/2

THE
OFFICE
PUBLISHER
1.0

WORDSTAR
PRO 4.0

WordPerfect
4.2

GEM
Desktop 2.1

PageMaker
1.0A

PC PAINTBRUSH
plus 1.0

Ventura
Publisher
1.1

WINDOWS
1.04/2.03

PUBLISHERS
PAINTBRUSH
1.03

1-2-3
1A

PRINCETON
GRAPHIC SYSTEMS
An Intelligent Systems Company
THE VISIBLE EDGE
601 Ewing St., Building A, Princeton, NJ 08540

For information concerning software compatibility call 609-683-1660.

Circle 89 on reader service card

To: Dave
From: John
Re: Monitor Analysis
For high resolution and
compatibility, the handwriting's
on the wall.
Place the order with
Princeton!

“Draw it again, Sam...”

Here's looking at . . .

Introducing “Draw It Again, Sam,”™ the newest drawing program for Macintosh™. With powerful extended features, it adds new dimensions to your Mac graphics.

If you have used MacDraw™ or MacDraft™ you've felt the power that a drawing program can put in your grasp. Imagine the same power brought to an even higher level, with features like libraries, layers, color, advanced text features, and a wide array of graphic display modes. . . Imagine “Draw It Again, Sam.”

Libraries Were Never This Much Fun

Only “Draw It Again, Sam” lets you create your own graphics and text libraries. Create any image, simple or complex, and copy it into a library. Click on an icon-like symbol or on the image's name in a menu, and place the image anywhere on any drawing. Store and retrieve frequently used images, text, or logos, building large libraries (up to 500 images) for drafting, designing, or just for fun. No more rooting through scrapbook files, no more wrestling with the clipboard, and no more wasted time!

Create a Masterpiece —Layer by Layer

Only “Draw It Again, Sam” lets you create and use up to ten transparent drawing planes. You can group similar objects together, as an architectural blueprint or an anatomical drawing. Peel them away to reveal layer after layer of detail. Or view them all while working on only one — and avoid those accidental mouse-clicks that make doing detailed drawings such a trial. Use layers in conjunction with colors to

produce spot color separations with ease or extend a single drawing into an animated series. You can even import a drawing and work over it or behind it without touching the original. Save or print the drawing layer-by-layer or as a whole. The possibilities are endless!

Amazing Graphic Flexibility Is Yours

“Draw It Again, Sam” uses the Macintosh's drawing modes to their fullest potential. Your objects can be in opaque, inverted, clear, or erased modes. You can experiment with overlaying transparent colors and patterns, you can even extend your drawing skills beyond the basics and generate an endless set of special effects. The countless colors and shapes achieved by this program are breathtaking.

To Paint or Not to Paint

Version 2.0 of “Draw It Again, Sam” adds a full set of painting tools to the drawing

ones. Now you can combine the fine detail of bit-mapped graphics with the flexibility and ease of object-oriented drawing. And you can use both paint and drawing tools on the same layer — either side by side or overlapping. The best part is, “Draw It Again, Sam” is compatible with other paint, draw and page layout programs, allowing you to import and export art forms.

You Must Remember This . . .

With its comprehensive set of features and ease of use, this program is one you have to get your hands on. To find out more, or to order your copy, call 1-800-234-0230 and say, “Draw It Again, Sam.”

Call or write:



SOFTWARE

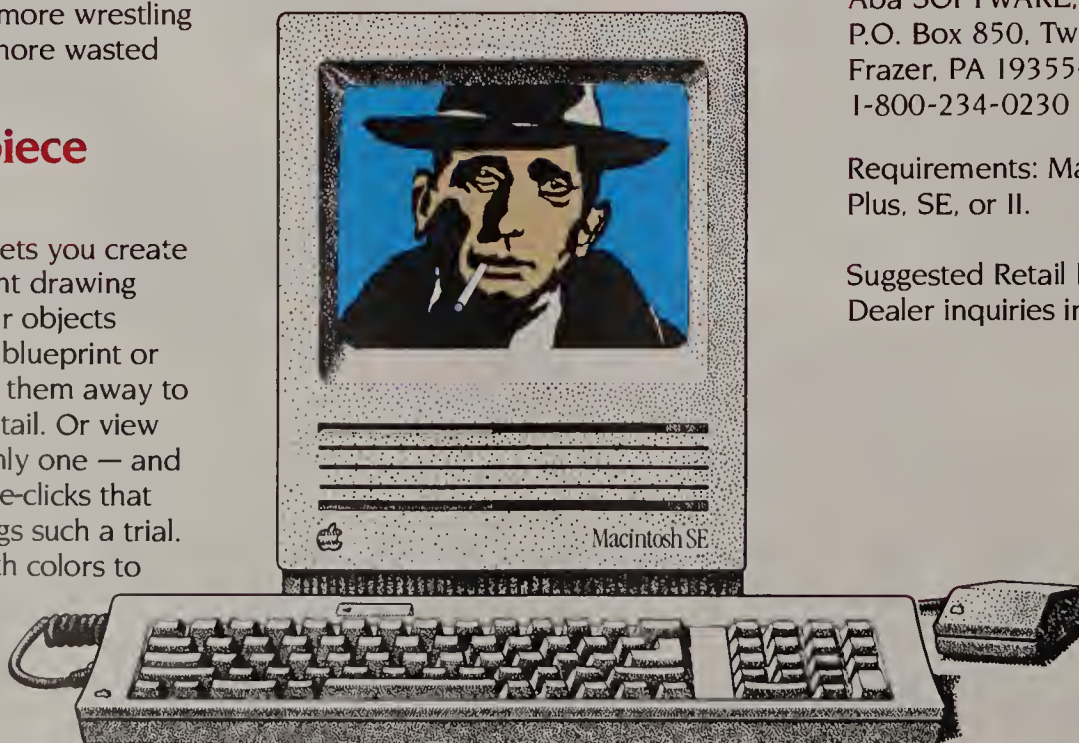
Aba SOFTWARE, Inc.

P.O. Box 850, Two Davis Avenue
Frazer, PA 19355-0915

1-800-234-0230

Requirements: Macintosh™ 512E,
Plus, SE, or II.

Suggested Retail Price: \$150
Dealer inquiries invited.



Draw It Again, Sam” © copyright 1987 Aba Software, Inc. all rights reserved. MacDraw, QuickDraw and the Macintosh models are registered trademarks of Apple Computers, Inc. MacDraft is a registered trademark of Innovative Data Design, Inc.

Circle 212 on reader service card

Mac Hard Disk Tools

A roundup of utility programs that make a hard disk work harder

by **Bangs L. Tapscott**

As hard disks decrease in price and software increases in K-count, more Macintosh owners find the wide open spaces of a hard disk irresistible. After you graduate from floppies to a hard disk, though, it takes only a little while for the disk to start looking like Fibber McGee's closet. And searching a crowded disk for a desperately needed file may seem like a job for Indiana Jones.

The hierarchical file system (HFS) used on all SCSI hard disks contributes to the problem. By nesting folders within folders, HFS makes it possible for the Mac to keep track of hundreds or thousands of files on a single disk. But the HFS structure makes it easy to lose files, and hard to get at the ones that are not lost. You innocently drag a file onto the desktop, drop it in just the wrong place, and *zap*—some unidentified folder swallows it. Or it's time to balance your checkbook file, and you have to burrow through five nested folders on the desktop just to open it.

Fortunately, software publishers have come to the rescue with utilities that help hard disk users to keep track of files and to use hard disks efficiently. The most important of these are the catalogers, locators, smoothers, launchers, and Finder substitutes. (Backup programs were covered in "Data Savers," *Macworld*, February 1988.)

What's on the Disk?

A cataloger tells you what is on a disk. More sophisticated ones produce files that users can save to disk, print, or manipulate on screen; such catalogers let users control the appearance and contents of a catalog.

Bangs L. Tapscott, professor of philosophy at the University of Utah, has written several books and articles on mathematical logic. He's a founding officer of the Utah Macintosh Users Group.



Look for *filtering*, which lets you select categories of files to exclude or include—for example, all Microsoft Word documents. Another desirable feature is the ability to save the catalog in a form you can import to databases or spreadsheets.

Beware of the limitations of incomplete path names. In HFS jargon, a *path* is a description of the folders-in-folders location of the item; to find a particular file, you need the complete list of the nested folders that lead to the desired file. Catalogers that

display in columnar format, as most of them do, may truncate long path names (see "Catalogers").

I tested the catalogers on a hard disk containing 15 megabytes of data, consisting of a little over a thousand files and about two hundred nested folders. Special thanks go to Fred Swan of Cutting Edge for help in preparing a test disk.

Disk Ranger is my personal favorite, by a narrow margin. It's the fastest of all the catalogers I tested, and it will catalog any hard disk or collection of floppies. The col-

(continues)

Catalogers

	Disk Ranger	DiskQuick	Cat Mac	FileTree	HFS Dir
Cataloging time ¹	1 min., 15 sec.	4 min., 37 sec.	1 min., 18 sec.	5 min., 44 sec.	1 min., 47 sec.
Display	columnar	indented	columnar	columnar ²	indented ²
Amount of catalog detail ³	***	***	**	****	**
Filtration ³	***	**	***	none	none
Saves as	catalog; text	catalog; text separated by tabs or commas	catalog; text separated by tabs or commas	text	text

¹ Tested on a volume with 15MB in about 1000 files nested in about 200 folders.

² Creates text file that must be opened with a word processor.

³ Relative amounts rated on a scale from one to four.

umnar display can be sorted alphabetically by file name, volume, type, or creator. Disk Ranger allows exclude-filtering on 14 preset file types, plus a wild-card type specified by the user. A Find feature locates any item in the catalog by partial file name: type in a string, and the program locates each file whose name contains that string. And Disk Ranger has the best floppy-disk labeling facility of the catalogers I tested.

DiskQuick, a commercial release of the shareware program Disk Librarian, is a powerful program with an elegant interface. DiskQuick takes more time to catalog a disk than Disk Ranger does, but it collects more data, including comments from Get Info boxes (in version 2.10 this feature

doesn't work when MultiFinder is running). The good-looking noncolumnar format shows all information fields without truncation. When you scroll the catalog window, it keeps the name of the current volume as the top line until the contents have scrolled past—a classy touch. The find option searches for partial file names.

Cat Mac is shareware. An excellent cataloger, its detailed online help means there is no need for a printed manual. It supports filtering on ten different file properties, any or all of which may be user-specified. Columns may be shuffled within the catalog to suit your taste.

HFS Dir is a no-frills shareware program that creates catalogs as external text-

only files on disk: fire it up and it catalogs the current volume without asking questions. To read or modify those files, you need a word processor or text editor. Catalog files, in outline form, look especially nice when opened with a text editor, such as QUED, that contains built-in tabs. HFS Dir catalogs only the current volume—not multiple floppies.

FileTree is another no-frills shareware program that catalogs only the current volume. Like HFS Dir, it is a text-only catalog on disk, but it produces an amazing amount of file information, including the screen coordinates of the file's icon. Another slow but otherwise attractive program, MDC II, is out of production; a suc-

Locators and Smoothers

	Find File	HFS Locator Plus	Locare	DiskTop	DiskTools II	Findswell	HFS Navigator
Type	DA	DA	F-key	DA	DA	Init	Installed
Search time ¹	55 sec.	75 sec.	75 sec.	60 sec.	32 sec.	35 sec.	67 sec.
Search flexibility ²	*	**	***	***	**	*	*
Amount of path information ²	**	**	***	***	***	*	*
Launches files			●		●	● ³	●
Renames		●	●	●	●		●
Copies		●		●	●		
Moves		●		●	●		
Deletes			●	●	●		●
Shows Get Info comments		●	●				
Creates new folders				●	●		●

¹ Tested on a 20MB disk with about 18MB of data in 1100 files.

² Relative amounts on a scale from one to three.

³ Launches only files in the current application.

cessor, currently in the works, promises to be much faster.

Where Did I Put It?

A locator helps you find the file that was swallowed by the anonymous folder. Type in some text and the locator tells you where to find every file with that text in its name. When deciding which locator to buy, look for flexible search criteria: how precise do your instructions have to be? Will the locator accept a partial string from the middle of the file name? Can the search criterion be a creation or modification date or something else other than a name? Power is also important: what can you do once the item is found? Another consideration is

HFS Locator Plus is a powerful desk accessory locator, supporting searches for partial names and/or for files created or modified before or after a certain date. Once located, a file may be renamed, deleted, moved to a different location, copied, or launched. Besides the path, Locator shows type and creator, creation/modification dates, size, standard Finder attributes, and Get Info comments (which you can edit within HFS Locator Plus). It also allows the creation of new folders (in which to save the located files).

Locare is a shareware F-key by Raymond Lau, author of other excellent Mac utilities. An F-key is invoked by holding down the **⌘** and Shift keys while hitting a

different branch, you need to follow a jagged path: back from the first branch to the trunk (that is, the Finder level of the file system), then into the other branch to the desired folder. A path-smoother avoids all that, by establishing a straight-line route between two folders no matter where they nest in the HFS tree.

Two smoothers, Findswell and HFS Navigator, do essentially the same thing but in different ways. Both modify the standard dialog box you see when you Save As or close a document and then choose Open from the File menu. They only come into play when you are already running an application or a desk accessory.

Findswell's simple installation procedure adds a new button in the corner of the dialog box (see "Faster Filing"). This button enables you to search for files or folders by name and save their names, once located, in a semipermanent list of files you refer to frequently. A click on a file name that is compatible with the current application (remember, you are already in an application when you run Findswell) opens that file.

I prefer HFS Navigator's simpler interface. With Navigator installed, clicking on the current folder name in the Open dialog box yields a Navigator menu of preselected folder names. Click one of them to go instantly to that folder (again, the window shows only files that the application currently running can read). Option-click on the folder name to see the normal HFS menu of folders instead; **⌘**-click to locate a particular folder or file and rename or delete it. In Save As mode, you can create new folders.

On to the Next Thing

The standard procedure for going from one application to another is to quit, wait while the Finder (the desktop) comes up, look for the next application, and open it. A launcher avoids the wait by going directly from one application to the next.

HFS Locator launches files and documents, but only after they have been pinpointed through a search. Some Finder substitutes also have impressive launch capabilities. But there is one launcher worthy of separate mention.

Launcher FKey is a public domain program (that means *free*). It is simple and

(continues)

Finder Substitutes				
	DiskTools II	DiskTop	Oasis	PowerStation
Type	DA	DA	application	application
Launches applications	•	•	•	•
Launches documents	•	•	•	•
Renames	•	•	•	
Copies	•	•	•	
Moves	•	•	•	
Deletes	•	•	•	
Erases disk	•	•		
Creates new folders	•	•		

search time: how long does the program take to find a file?

It is difficult to compare search times for a specific file objectively, because different programs scan directories in different orders. The figures given in "Locators and Smoothers" show the time required to search the entire test volume (a 20MB hard disk containing about 18MB of data in 1100 files) and represent the amount of time it would take to locate a single file if it were the last one in the last directory.

The Find File desk accessory is included with Macintosh System software version 4.1 and later. It's not fast or powerful, but it works, and it's free. Find File searches only on the initial segment of a file name, and shows path name, creation/modification dates for the file, and size in bytes and kilobytes.

number key, useful when you are within a program that doesn't support desk accessories. Locare searches on partial names and will filter by file type, creator, or modification date. Locare shows the complete path, the size of the data and resource forks of the file, the creator and type, and creation/modification dates and times. It also shows and edits Get Info comments.

Two other excellent locator facilities are found in the Finder substitutes DiskTop and DiskTools II.

Save Me from HFS

To get from a folder concealed in a series of folders on one branch of the HFS tree hierarchy to another folder nested in a

Now you can capture any moving image in real-time on the Mac II.



Fred Molinari, President



Image capturing an elephant with a mouse! For the first time ever, **QuickCapture™** lets your Mac® II capture, display, process, and print real-life images from up to 4 video cameras or VCRs. Images can even be formatted to work with MacPaint®, MacDraw®, MacWrite®, Hypercard™, ImageStudio™, and PageMaker®.

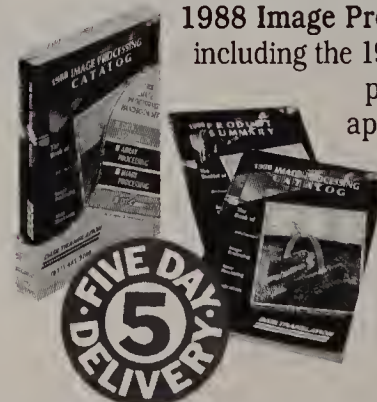
QuickCapture also takes advantage of the Mac's high resolution screen by providing 640 x 480 square-pixel display with 256 gray levels.

Just \$995 buys a **QuickCapture** frame grabber board and powerful image processing software.

And since **QuickCapture** is made specifically for the Mac II, you'll get pull down menus, window prompts, and icons that make it easy to operate.

If you'd like to create unforgettable moving experiences on your Mac II, give us a call today. **(617) 481-3700.**

To learn more, call to receive the premier edition of our **1988 Image Processing Handbook Set**, including the 1988 Catalog featuring full product information and application stories, and the 1988 Product Summary complete with pricing.



APPLICATIONS BOX		
Business, Graphic Arts, and Entertainment	Scientific	Industrial
Animation Electronic prepress Electronic publishing Film colorization Picture databases Slidemaking Training	Astronomy Medical diagnostic imaging Microscopy Modeling Motion analysis Remote sensing Surveillance	Machine guidance Machine vision inspection -Agriculture -Cosmetics -Components -Foods -Textiles Robotics

DATA TRANSLATION®

World Headquarters: Data Translation, Inc., 100 Locke Drive, Marlboro, MA 01752-1192, (617) 481-3700 Tlx 951646
 United Kingdom Headquarters: Data Translation Ltd., The Mulberry Business Park, Wokingham, Berkshire RG11 2QJ, U.K. (0734) 793838 Tlx 94011914
 West Germany Headquarters: Data Translation GmbH, Stuttgarter Strasse 66, 7120 Bietigheim-Bissingen, West Germany 07142-54025
 International Sales Offices: Australia (2) 662-4255; Belgium (2) 735-2135; Canada (416) 625-1907; Chile (2) 25-3689; China (408) 727-8222, (8) 721-4017; Denmark (2) 274511; Finland (90) 372-144; France (1) 69077802; Greece 951-4944, 527-039; Hong Kong (3) 771-8585; India (22) 23-1040; Israel (3) 32-4298; Italy (2) 82470.1; Japan (3) 502-5550, (3) 375-1551, (3) 355-1111; Korea (82) 756-9954; Netherlands (70) 99-6360; New Zealand (9) 504-759; Norway (02) 55 90 50; Portugal 545313; Singapore 7797621; South Africa (12) 46-9221; Spain (1) 455-8112; Sweden (8) 761-7820; Switzerland (1) 723-1410; Taiwan (2) 709-1394; United Kingdom (0734) 793838; West Germany 07142-54025.
 Microsoft is a registered trademark of Microsoft Corporation. PageMaker is a registered trademark of Aldus Corporation. Mac, MacPaint, MacDraw, and MacWrite are registered trademarks, and HyperCard is a trademark of Apple Computer, Inc. Data Translation is a registered trademark, and QuickCapture is a trademark of Data Translation, Inc.

Circle 132 on reader service card

Step up to the front of the room and your preparation stops. The presentation starts.

And nothing can give it impact like putting it on film. Film gives it credibility. Makes it more dynamic. Exciting. Memorable.

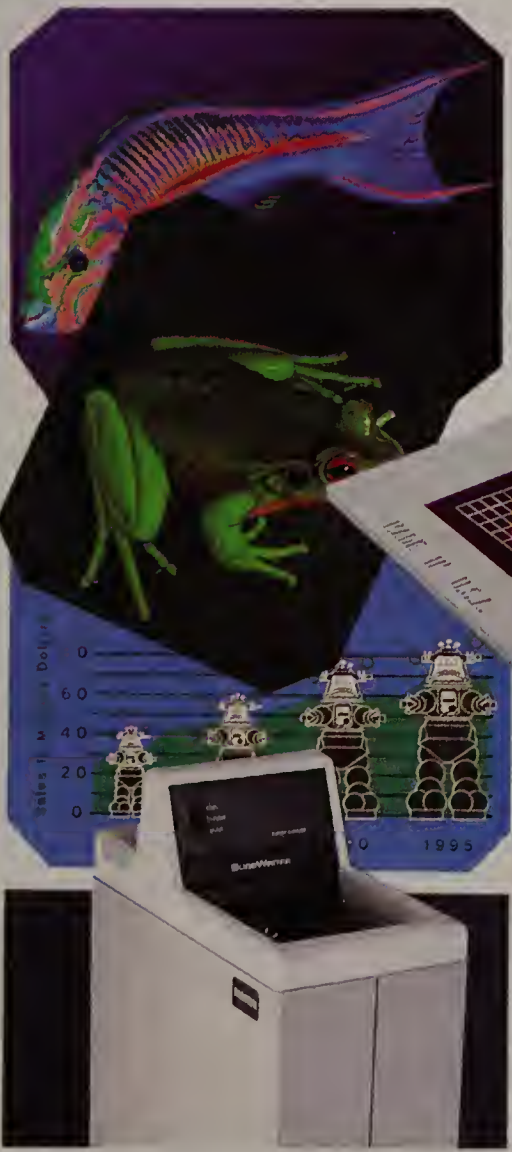
Nobody understands that better than Matrix.



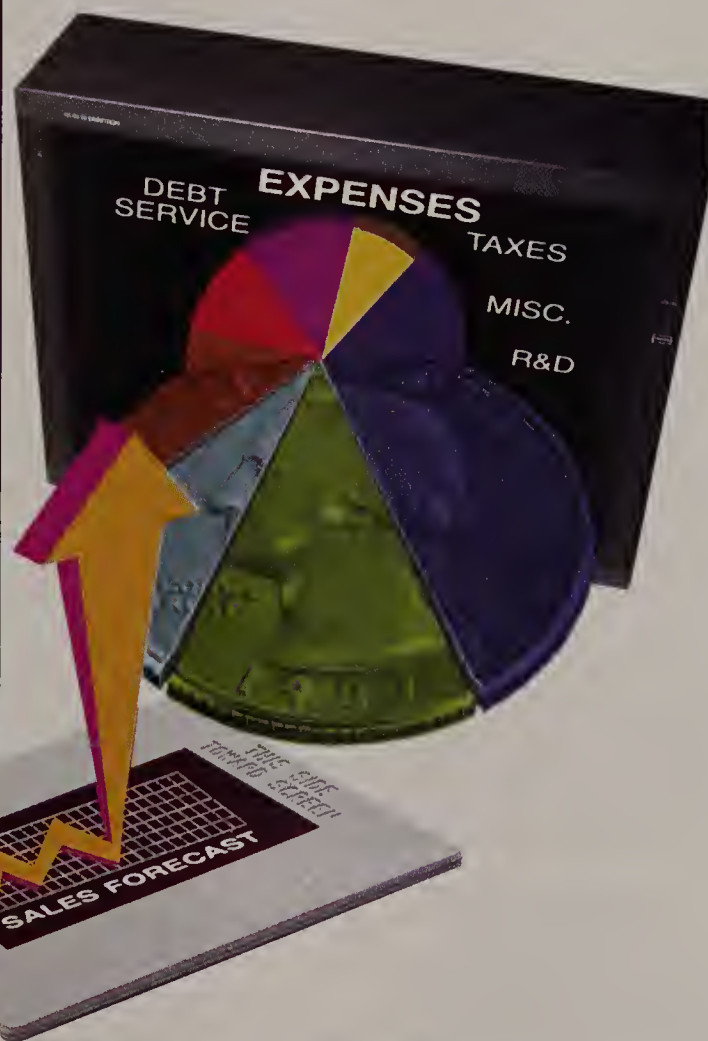
Service bureau quality with in-house control...at a fraction of the price.

All Matrix imaging equipment has a few things in common. There's remarkable color and artistic control. Plus high resolution output (you might have heard this called "boardroom quality"). For example, there's complete control over your information and its presentation. Slides – when and how you want them. And reliability that's second to none.

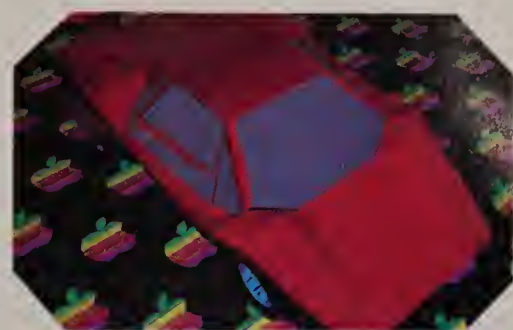
All without leaving your Mac.



**IT'S
THE SLIDE
PRESENTATION
OF YOUR LIFE.
YOU'VE BEEN
WORKING ON IT
FOR WEEKS.
THE ROOM WILL
BE PACKED.**



**YOUR IMAGE IS
ON THE LINE.
YOU NEED
MATRIX.**



SlideWriter.™ Slides that look even better on the big screen than they do on your Mac's.

Of all the reasons you invested in a Macintosh,™ chief among them had to be its outstanding graphic capabilities.

Shouldn't your output be every bit as good?

Well, with the Matrix SlideWriter, it is. Better, in fact. Because as good as your graphics look on a standard monitor – they'll have *eight times* that resolution on the slide – for sharp images that are limited only by your imagination.

More than that, you can rely on SlideWriter to make the most of your Mac's capabilities. Like creating spectacular color images from paint and draw software. Using text in various combinations of styles and sizes. Merging pictures with your graphics. Matching logo colors. And imaging shaded, 3-D solid models.

Which means you can easily create materials for all kinds of business, scientific and design applications without the high cost of prototyping.

What's more, you can accomplish all of this with programs you're already using. Our PICT file-compatible utility software uses a pull-down menu interface; allowing you to easily add color to black and white graphics. To preview. And to crop. Plus, to keep things simple, SlideWriter handles text in the same manner as LaserWriter® – with even higher resolution than your monitor.

And since SlideWriter was designed for the Mac, it offers the easy handling and compatibility you already know and love.

Call 1-800-852-8533 or write for more information about the SlideWriter or any of our growing line of Matrix imaging products. And get ready to make the presentation of your life. After all, anyone can project an image. We *protect* it.

AT MATRIX, SOMETHING NEW IS ALWAYS DEVELOPING.

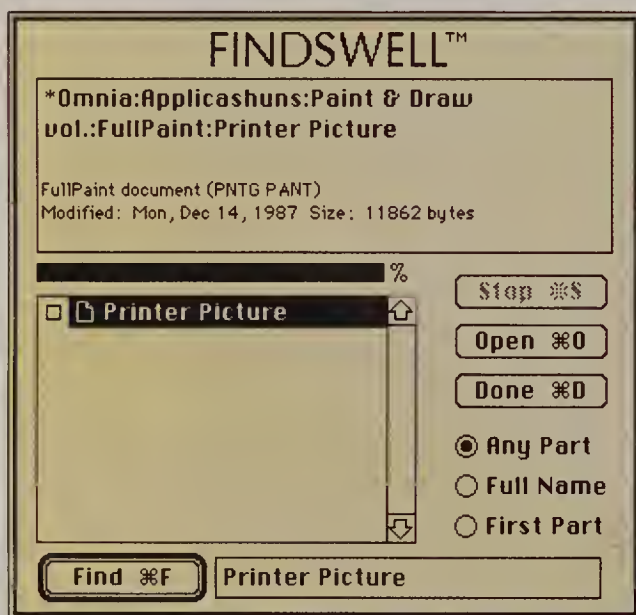
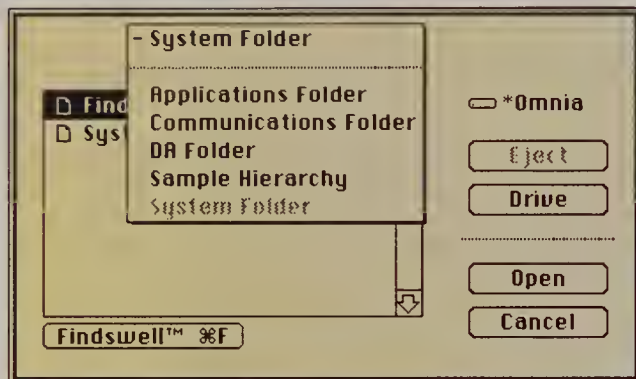
**#MATRIX
INSTRUMENTS INC.**

One Ramland Rd, Orangeburg, NY 10962
1-800-852-8533.

LaserWriter is a registered trademark and Macintosh mark of Apple Computer, Inc.

Circle 135 on reader service card

error-free; I've been using it for over a year, and I've never seen the bomb message while using it. Invoke the F-key and nothing happens—except a beep—until you quit the current application. Then, instead of returning to the Finder, you get the standard Open dialog box. Move through folders until you find the application you want, select it, and you open the new application. Launcher FKey is especially handy when combined with HFS Navigator, which smooths the trek through folders to find the application you want.



Faster Filing

Here's how the Open dialog box looks with both Findswell and HFS Navigator installed. Navigator replaces the standard pop-up menu with its own menu, displaying folders of your choice. When you click the Findswell button, the illustrated box appears. You type the name of the file you want, the path description appears in the box at the top, and if you're in the right application, you double-click to open it.

Avoiding the Finder

The Finder is another Macintosh mixed blessing. Many users feel deep down that they're not really working on a Mac unless they can see the desktop with

all its icons and windows and other wonderful business. But creating that wonderful business on the screen consumes lots of computer processing time and power. With a hard disk and a really complicated desktop, the resource drain is even greater. Finder substitutes perform most Finder functions and more, without the luxurious desktop display (see "Finder Substitutes"). The four reviewed here are two sets of fraternal (similar, but not identical) twins: a pair of desk accessories, and a pair of applications. A new program appeared too late to include in my tests: MacTree displays folders in the form of a tree chart and from there lets you copy, move, delete, or rename anything on the disk.

DiskTop and DiskTools II are powerful and elegant desk accessories with so many essential features in common that it is difficult to rate either of them higher than the other. They differ mainly in embellishment and interface. DiskTop is mostly button and menu driven; DiskTools is mostly icon driven (see "Alternative Desktops"). First, their common features.

The contents of the hard disk are shown, folder by folder, in a window similar to the Finder's View by Name display. Files can be renamed, moved to a different folder or disk, copied, or deleted. You can create new folders and erase disks. A Find feature locates files by partial file name or creation/modification date. You can examine and modify file properties such as type, creator, and Finder attributes.

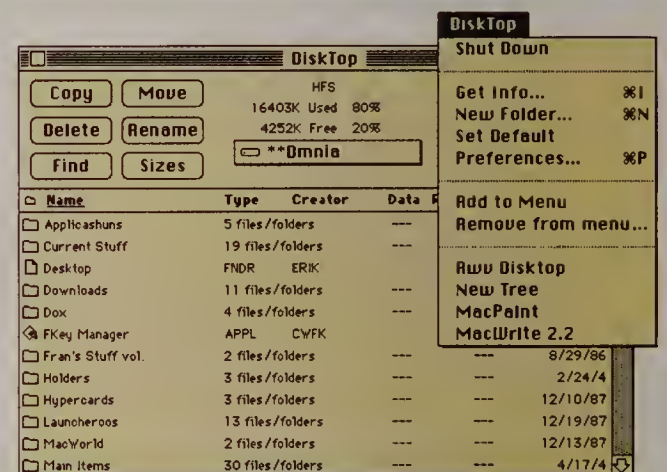
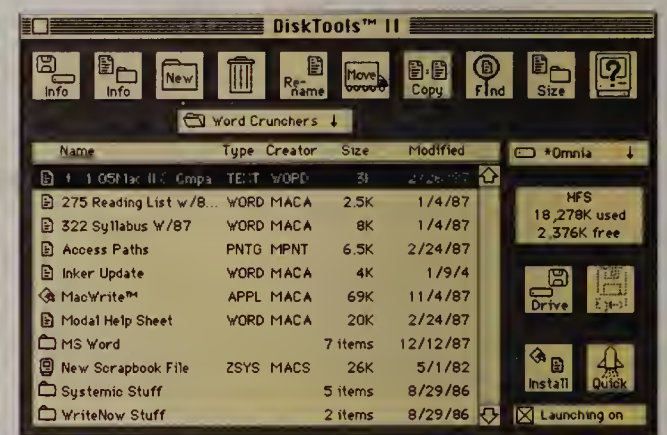
To launch either files or documents, double-click on them in the display window. Additionally, you can construct a *fast launch* list of files, which allows them to be launched at any time regardless of what shows in the file window. In short, with either DA you can do nearly everything that you can with the Finder (except printing) and then some.

DiskTools takes noticeably less search time than DiskTop. DiskTools' icons let you click to see the status of the Mac and the System and Finder versions, and they allow quick step-downs through the folder hierarchy in the file window. You can customize DiskTool's fast launch list in ways that DiskTop doesn't permit.

DiskTop's locator allows immediate launch of a file once it has been located. DiskTools' doesn't. Also, DiskTop allows you to attach comments to files, in addition to the regular Get Info comments. DiskTop comments are accessible only through DiskTop and do not get erased when the

Desktop file is rebuilt, as Get Info comments do. A problem in version 3.0 that caused DiskTop to bomb under Multi-Finder was corrected in version 3.02.

Since both DiskTop and DiskTools are DAs, all of their features are available while you are running an application, as well as when you are at the desktop.



Alternative Desktops

The two Finder substitutes DiskTools and DiskTop are similar in look and function, but DiskTools is almost entirely icon-driven while DiskTop relies on menus and buttons.

Oasis and PowerStation are Finder-substitute applications. Unlike the DAs, these Finder replacements provide an alternative home base to return to when quitting an application. Because they use a relatively fixed screen display, returning to them is much faster than redrawing the Finder's elaborate desktop.

I haven't noticed any significant difference in launch times between Oasis and PowerStation. Both come with screen savers that darken the Mac's screen during periods of inaction.

Oasis is shareware by Jan Eugenides. It holds up to a hundred buttons, if you need that many. In addition to launching applica-

(continues)

Explode Your Macintosh!

How often have your groups huddled around your computer trying to see your data or graphics?

Have you wished you could use Macintosh™ computer high-quality graphics in your presentations?

The MacViewFrame™ projection display solves these problems. MacViewFrame is a low-cost, easy-to-use tool for “exploding” your computer’s text and graphics on a large screen, using any ordinary overhead projector. It serves both large and small audiences.

Simply place MacViewFrame on your overhead projector in place of the usual transparency. Your computer display can be enlarged from three to 20 times normal size onto a screen or wall.

Full Macintosh resolution means instant compatibility with all software. High contrast means a crystal-clear image from edge-to-edge.

Blow them away at your next group presentation!

With MacViewFrame!

“...I liked the MacViewFrame™ so much I bought one for our Macintosh labs.”
— Don Crabb, InfoWorld

“There are now two things that Don Crabb of InfoWorld and I agree on — MacViewFrame™ and 4th Dimension™. ACIUS uses MacViewFrame™ for user group demos, sales calls and training. I highly recommend it because of its portability, dependability and quality of output.” — Guy Kawasaki, President, ACIUS, Inc.

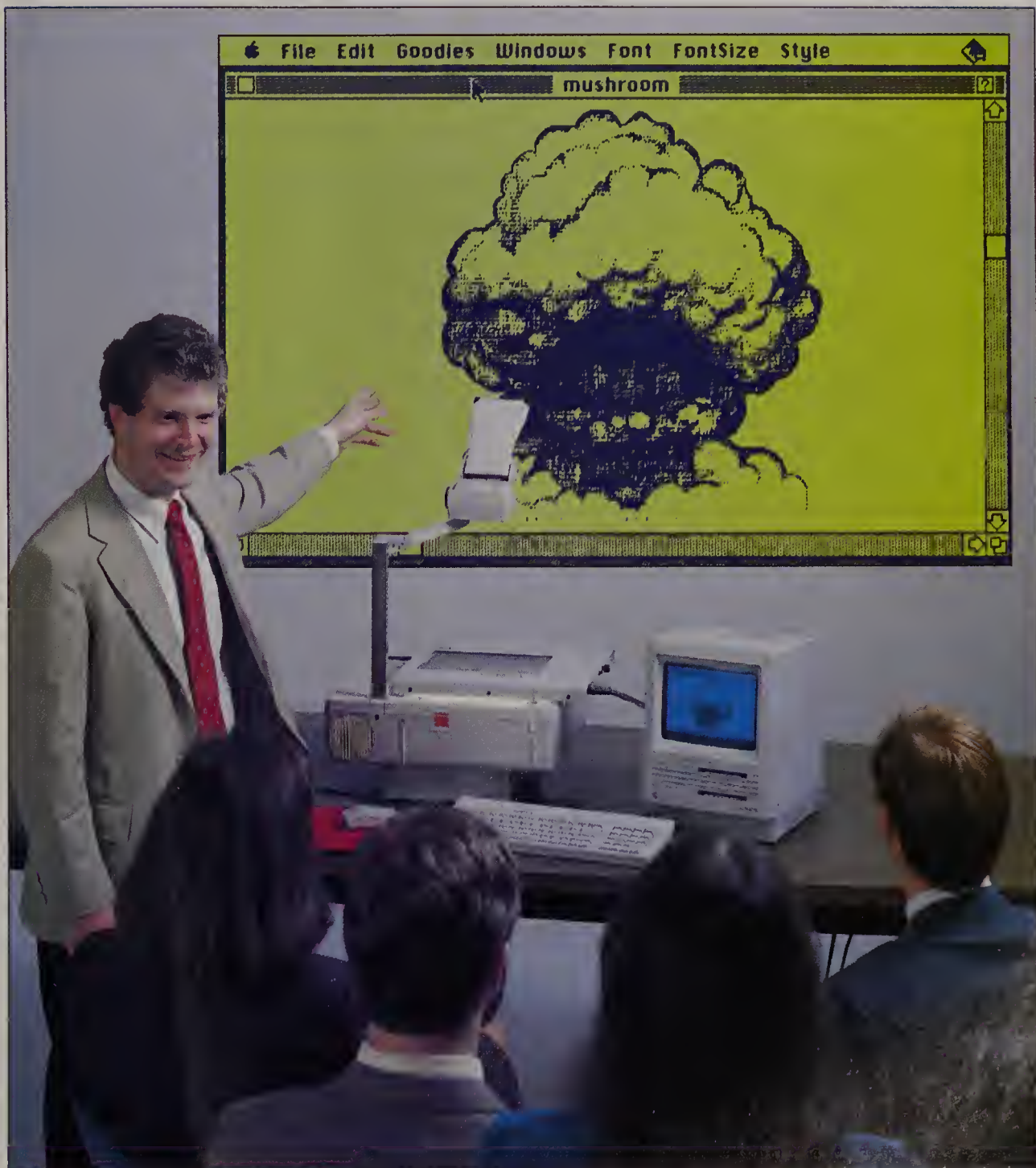


Editor's
Choice

nView Corporation
11835 Canon Blvd., Suite C-101
Newport News, VA 23606
(804) 873-1354 FAX (804) 873-2153

Macintosh is a registered trademark of Apple Computer, Inc. MacViewFrame is a registered trademark of nView Corporation.
©1988 nView Corporation

With MacViewFrame™ Projection Display



MacViewFrame is the first low-cost portable LCD computer projection display for the Macintosh. MacViewFrame comes with an attache case, video adapter, interface cable, and power supply.



Score One For Our Team.

Cleaning up the environment is easy when we work together! So, Team Up and take the Woodsy Pledge: We Give a Hoot, so We Won't Pollute!



Forest Service—USDA



How To/Mac Tools

tions and documents, Oasis lets you copy, rename, delete, and move files. A Transfer feature enables you to launch any application, not just those with buttons. It opens under MultiFinder but does not stay loaded after a document launches from MultiFinder.

PowerStation has a capacity of 432 buttons—more than enough to undo the good of a Finder substitute, if you get carried away. However, you can append a list of documents to a button for an application; you can then open those documents without chasing them down through the HFS tree. A fixed Other button lets you launch applications without buttons of their own. PowerStation lacks the file-manipulation options of Oasis but is fully operational under MultiFinder.

Both programs are extremely easy to use, and can speed up and simplify many of the tasks a hard disk owner does with the Mac. Your best bet, if you really want to avoid contact with the Finder, is to pair up one of the applications with one of the DAs: PowerStation with DiskTop, for example, or Oasis with DiskTools. These combos will do essentially everything the Finder does, plus more. Then make PowerStation or Oasis the start-up application (use Set Startup in the Finder's Special menu), and the only time you'll need to go to the Finder is when you want to look at the pretty pictures.

A Note on Shareware

I would like to say a little something on the subject of shareware, which is a marketing and distribution method rather than a kind of software. Shareware isn't sold in stores; instead it's passed from hand to hand. You copy it from someone and try it out. If you like it and use it, then you send the creator payment for it. Although shareware is widely pirated, it's *not* in the public domain, and it's *not* free. Shareware fees tend to be under \$30, belying the notion that software has to be expensive to be good. Many of the Macintosh's most widely used programs are, or started out as, shareware. Be sure to pay for the shareware you use. If you don't, you poison the well. □

See *Where to Buy* for contact information.

Very fast, Very colorful, Very portable.

It's even faster than before. And with direct-to-chip 68881 support, True BASIC™ 2.0 really roars. Plus full support for color graphics, including user-defined color palettes.

There's a lot here to make you more productive. Like modules and workspaces. Full matrix algebra syntax. New compiler options. Editor scripts and user-defined macros. Updated support for Toolbox routines. Plus optional libraries for things like 3-D graphics and curve-fitting.

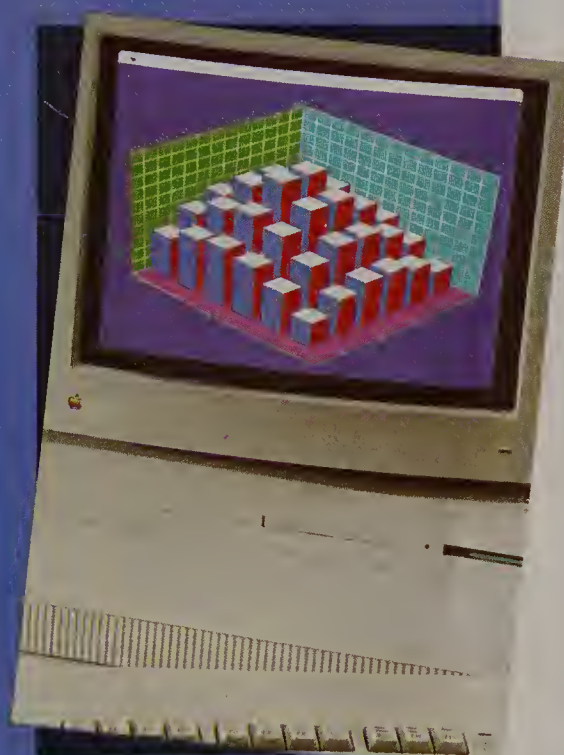
And True BASIC's portable. So if your world includes anybody who uses a PC, Amiga® or Atari® ST, you can share programs and data with them, too.

With all these new features, it's still just \$99.95 (or with commercial runtime for \$149.95). So see your dealer or call us toll-free at 1-800-TRBASIC.

True BASIC Version 2.0 for the Macintosh.™

True BASIC, Inc. • 39 South Main Street
Hanover, NH 03755 • 603-643-3882

Trademarks True BASIC of True BASIC, Inc. Macintosh of Apple Computer, Inc. Amiga of Commodore Amiga, Inc. Atari of Atari Corp.



True
BASIC inc.

Circle 75 on reader service card

SAVE
\$23~~40~~
off the
cover
price

12 Issues for \$24!
When you subscribe today

☐ Send me 1 year (12 monthly issues) of
MACWORLD for \$24. Save 20% off the basic
subscription rate.

☐ SAVE EVEN MORE! 2 years (24 monthly issues)
for \$37.90.

Please Bill me later.

4BTQ2

Name_____

Company_____

Address_____

City/State/Zip_____

By regular subscription, *MACWORLD* is \$30 for 12 issues. The annual cover price is \$47.40 (12 issues).
Offer available to subscribers in the U.S. only. Please allow 6-8 weeks for delivery of your first issue.



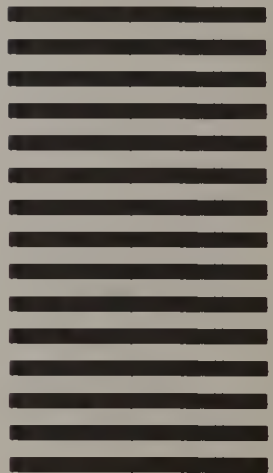
MACWORLD

The Macintosh® Magazine

SAVE
ALMOST
50%
**SEE
BACK**



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES



BUSINESS REPLY MAIL

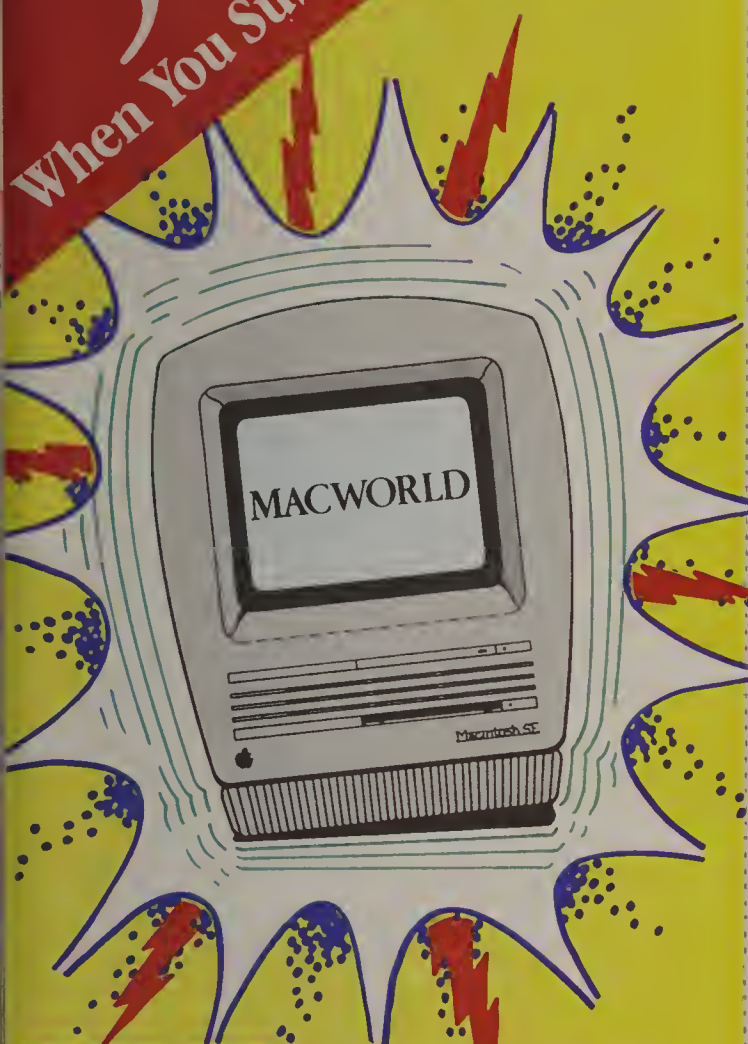
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Subscription Department
P.O. Box 51666
Boulder, Colorado 80321-1666



SAVE
ALMOST
50%
Off the
Cover Price
When You Subscribe Today



UNLEASH The Potential Of Your MAC!

Discover The Power
Of Macworld At A
Special Savings Rate.

Applications. Communications.
Power upgrades. Tutorials.
Buying guides. Answers to your
questions. Straight-shooting
reviews. Graphics and more.
All from a user's point-of-view!

More Power! 12 Issues for ~~\$47.40~~

NOW ONLY
\$24.00

- ☐ Send me 1 year/12 monthly issues of MACWORLD for \$24. Save 20% off the basic subscription rate.
- ☐ **Save Even More!** 2 years/24 monthly issues for \$37.90.

Please Bill me later.

Name _____

Company _____

Address _____

City State Zip _____

By regular subscription, Macworld is \$30 for 12 issues. The annual cover price is \$47.40 (12 issues). Offer available to subscribers in the U.S. only. Please allow 6-8 weeks for delivery of your first issue.

MACWORLD

More Information! 12 Issues for ~~\$47.40~~

NOW ONLY
\$24.00

- ☐ Send me 1 year/12 monthly issues of MACWORLD for \$24. Save 20% off the basic subscription rate.
- ☐ **Save Even More!** 2 years/24 monthly issues for \$37.90.

Please Bill me later.

Name _____

Company _____

Address _____

City State Zip _____

By regular subscription, Macworld is \$30 for 12 issues. The annual cover price is \$47.40 (12 issues). Offer available to subscribers in the U.S. only. Please allow 6-8 weeks for delivery of your first issue.

MACWORLD

More to Give! 12 Issues for ~~\$47.40~~

NOW ONLY
\$24.00

A one-year subscription (12 issues for just \$24) will be sent to the person listed below. Save 20% off the regular subscription rate of \$30 and nearly 50% off the annual newsstand price of \$47.40.

Please Bill me later.

Send Gift to: Name _____

Address _____

City/State/Zip _____

Send Gift from: Name _____

Address _____

City/State/Zip _____

Please allow 6-8 weeks for delivery of your first issue. Offer good in the U.S. only

MACWORLD



4BTP4



4BTP4



2ADF9

Save Almost
\$24.00
Off the cover price.



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

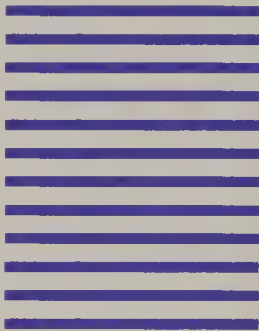
POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Subscription Department
P.O. Box 54515
Boulder, CO 80321-4515



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Save Almost
\$24.00
Off the cover price.



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

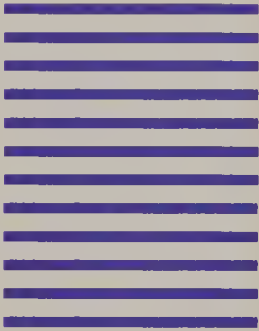
POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Subscription Department
P.O. Box 54515
Boulder, CO 80321-4515



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Save Almost
\$24.00
Off the cover price.



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Subscription Department
P.O. Box 54515
Boulder, CO 80321-4515



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Save
Nearly
When
You Subscribe Today!

50%

MACWORLD

The magazine that helps you
get the most from your Mac

Macworld is your key to it all. Productivity. Creativity. Whether you want to upgrade software, hardware. . .or learn to use what you have to its fullest potential.

That's what Macworld does—links the Mac's potential to yours.

We look out for your interests. We tell you what's new for the Mac. What it does. Who it's for. Compare similar products—and name names! Discuss pros and cons. Assess value for money for both hardware and software.

We help clarify your options. Is the upgrade worth it? What does this program do that your present software doesn't? Will it work with your printer? If we help you make just one right decision, your subscription is worth it!

Macworld is more product-driven, more YOU-oriented than ever before. The thing to do now is make the most of your Mac. Macworld is the key.

- Applications
- Power Upgrades
- Buying Guides
- Straight-Shooting Reviews



Mail The
Attached Card
Today!



Why you should buy a mouse with no moving parts.

One simple reason. No moving parts. And that means no problems.

Introducing the A+ Mouse from Mouse Systems. The A+ Mouse is an all optical mouse with no moving parts. It doesn't depend on friction, so there aren't any parts that can slip, get dirty or wear out. It doesn't have a rolling ball, a commutator, little teeny bearings and shafts, or plastic housings housing who-knows-what.

Instead, our mouse uses a mirror-like pad that reflects a tiny beam of light to track your slightest hand movement. No other mouse moves as fast or is as reliable.

Especially when you're moving around in spreadsheets and graphics software or editing text and manipulating data. That's because our mouse gives you up to 200 counts per inch and digital accuracy for exceptional cursor control.

Plus solid state electronics to ensure precision.

No matter what Apple system you have, we have an

A+ Mouse that's right for you.

The A+ Mouse is compatible with the Macintosh 512K, Macintosh Plus, Apple IIc and Apple IIe (which requires the Apple mouse card).

The A+ Mouse ADB is ideal for the Macintosh SE, Macintosh II, and Apple IIGS.

The A+ Mouse. The mouse you'll never have to clean, repair or replace. It's so reliable, it's the only mouse which comes with a Lifetime Warranty.*

See your local dealer for a demonstration. Today.

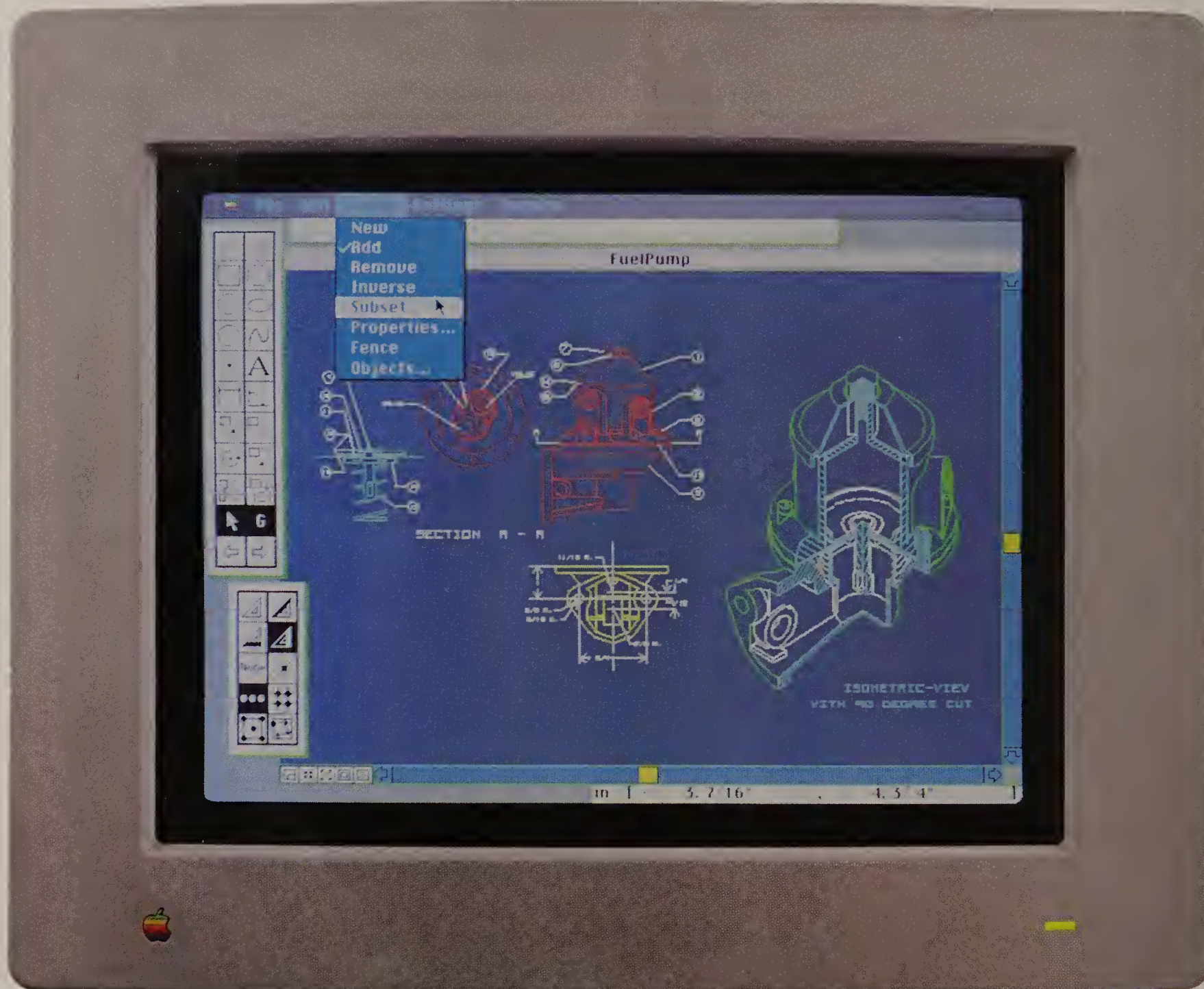
A+ MOUSE
MOUSE SYSTEMS



*Warranty limited to North America. Contact MSC Technologies for details. Apple is a registered trademark and Macintosh is a trademark of Apple Computer, Inc. Mouse Systems is a trademark of MSC Technologies Inc. © 1987 MSC Technologies Inc., 2600 San Tomas Expressway, Santa Clara, California 95051 (408) 988-0211.

Circle 397 on reader service card

The Standard.



Fuel pump design courtesy Harald Belker, Georgia Southern College.

VersaCAD on the Mac.

1.

Professional Tool —

You're a professional. You know the importance of a CAD program that'll expand your capabilities — not limit them. And so does VersaCAD, the pioneer of microcomputer CAD since 1981. That's why our new Macintosh Edition is already the CAD standard on the Mac.

2.

Macintosh Simplicity—

Taking the time to master a new tool costs money, so you need a package that's quick and easy to use. Building on our reputa-

tion for user friendliness, VersaCAD/ Macintosh Edition adds "point and click" simplicity to get you designing fast.

3.

Top Support —

Even a pro needs a little help now and then.

Whether you want to master detail editing or build complex symbol libraries, our top-rated technical support department will lend a hand. You'll soon know every shortcut in the book.

Behind every VersaCAD product is the strength of Prime Computer, Inc.,

Circle 67 on reader service card

one of the two largest CAD companies in the world.

To find out for yourself why VersaCAD is the CAD standard on the Macintosh, see your authorized VersaCAD/ Macintosh Edition dealer today— or call (714) 960-7720.



For the Macintosh Plus, SE, and the new Macintosh II.
Versacad Corporation, 2124 Main Street, Huntington Beach, CA 92648
A Company of Prime Computer, Inc.

Updates

This list brings you the highlights of software updates recently received. The first price is the upgrade cost for registered owners; the second is the current list price.

AEC Information Manager version 1.21 is faster. It provides increased graphics capability, contains more example files, and comes with new documentation. AEC Management Systems, 20524 Amethyst Ln., Germantown, MD 20874, 800/346-9413, 301/428-3694 in Maryland. Free; \$695 new.

Colorizer version 1.1 supports color menus and multiple color displays. This version can copy selected pixels of a color image to the Clipboard. Palomar Software, P.O. Box 2635, Vista, CA 92083, 619/727-3922. Free; \$49.95 new.

Cue version 2.0 adds the ability to synchronize clicks and sound effects to a film's SMPTE track through the use of the MIDI Time Code. Also lets you sync up to 40 MIDI event triggers that will be played at specified SMPTE locations when laying back sound effects to audio tape. The SMPTE lock allows input of cue points directly from video with a single keystroke when using Vertical Interval Time Code. Opcode Systems, 1024 Hamilton Court, Menlo Park, CA 94025, 415/321-8977. \$75; \$595 new.

DiskFit version 1.4 includes the DataStream Tape Driver, which allows you to back up any 3M DC 2000 tape unit. This version works in the background under Multi-

Finder and allows you to exclude folders from a backup. Mac II compatible. SuperMac Software, c/o Logistix, 1380 Piper Dr., Milpitas, CA 95035, 415/962-2477. \$20; \$99.95 new.

DiskTop version 3.0.2 is MultiFinder compatible and supports international systems. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. Free; \$49.95 new.

Draw It Again, Sam version 2.0 enables bitmaps to be used with object-oriented graphics on the same layer. Aba Software, P.O. Box 850, Frazer, PA 19355, 800/234-0230, 215/644-3580. Free; \$150 new.

Front Desk version 6.0 includes multiuser capabilities. It can use up to 30 resources, is LaserWriter compatible, and has new report formats. Layered Inc., The Schrafft Center, 529 Main St., Boston, MA 02129, 617/242-7700. Single user \$49, multiuser \$69 per node; single or multiuser version \$99 per node new.

Great Plains Accounting Series version 4.2 follows Apple interface guidelines and adds new commands to the File menu. Option/⌘ lines are now buttons, a Pause/Continue/Cancel dialog box is available during printing, and ⌘-period(.) aborts reports. The main window may be up to 132 columns wide, and menu windows now have true arrow keys. Great Plains Software, 1701 S.W. 38th St., Fargo, ND 58103, 701/

281-0550. Free for Customer Assistance subscribers, otherwise \$50 per module; \$795 per module new.

Insight Expert Accounts Receivable, Accounts Payable, and General Ledger versions 2.0 fix bugs, print in draft mode, and are ImageWriter II and AppleShare compatible. Accounts Receivable (A/R) supports up to five decimal places for unit price, unit cost, tax rate, and quantities. It adds questions about decimal places and audit history to Business Set-up. The rounding procedure follows standard conventions. Batch Date has been added to the sales and cash receipts journal. The tax exempt field on the customer information card now allows 16 characters. Password security does not limit the number of users. Accounts Payable (A/P) prints an Expert Report. The company name field has been extended to 35 characters. Expense distribution report now uses a faster sorting method. All user-entered dates are checked for validity. A/P can print an entire ledger card; the Expert Report plots graphs. Multiuser A/R and A/P support up to 16 users on a file server or AppleShare-compatible network. Allows users to work on invoices, checks, and journals, then consolidate to one posting. Multiuser A/R prints custom labels. Layered Inc., The Schrafft Center, 529 Main St., Boston, MA 02129, 617/242-7700. Standard upgrade \$25 per module, multiuser upgrade \$295 per module; \$595 each new.

(continues)

Laser FX version 1.6 includes a built-in font downloader and a Laser-Writer status report. The menus have been rearranged for more efficient use. Postcraft International, 27811 Avenue Hopkins, #6, Valencia, CA 91355, 805/257-1797, 416/641-0768 in Canada. Free, with \$10 s/h; \$195 new.

Listen version 2.1 improves the user interface and incorporates a level-selection menu. New manual available. Resonate, P.O. Box 996, Menlo Park, CA 94026, 415/323-5022. \$34, unregistered users must also return the original disk; \$99 new.

MacCalc version 1.2c is compatible with MultiFinder. Bravo Technologies, P.O. Box 10078, Berkeley, CA 94709-0078, 415/841-8552. Free; \$139 new.

MacEqn version 2.1 features a symbol palette for customizing MacEqn, a command palette, limited programmable characters, programmable groups, new group characters, support for diacritical marks ("hats," tilde, dot, double dot), metric or English rulers, sizable window, vertical scrolling, sweep character selecting, help menu option, traditional form, and selection dragging. Supports direct printing from MacEqn. Software for Recognition Technologies, 55 Academy Dr., Rochester, NY 14623, 716/359-3024. Return original disk plus \$12; \$44.95 new.

MacFlow version 2.0 lets you specify flow-chart size up to 8 pages by 8 pages; adds custom drawing tools and ability to output PICT files. Mac II compatible. Revised documentation available. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301, 818/991-6540. \$25; \$195 new.

MacLinkPlus version 2.0 includes Mac-to-Mac communications capabilities, new options such as Word-Perfect and Microsoft Word in the library of document translators, and Apple File Exchange compatibility. DataViz Inc., 16 Winfield St., Norwalk, CT 06855, 203/866-4944. Free if purchased after Oct. 1, 1987, otherwise \$20; \$195 new.

MacNail version 1.5 provides multiple windows and single-column format; recalculates faster. This version adds four estimators for construction work: new construction, gut/rehab, additions, and small jobs/repairs. Also has a short form; able to track job costs on one or two levels of detail. Turtle Creek Software, 651 Halsey Valley Rd., Spencer, NY 14883, 607/589-6858. Free; \$195 new.

MacPaint version 2.0 features tear-off tool and pattern palettes, up to nine resizable document windows open at one time, a snapshot function for saving documents at various stages, and automatic document scrolling while using the drawing or selection tools. Enlarges to 200, 400, or 800 percent, or reduces to 50 percent, all with editing capability. Supports full-page displays as well as built-in Macintosh monitors. Adds ability to create custom start-up screens and ability to save document templates. Displays size and location of shapes as you draw them. Shapes can be drawn from the center outward or from corner to corner. Supports MultiFinder. Claris, 440 Clyde Ave., Mountain View, CA 94043, 415/960-1500. Free if purchased after December 14, 1987, otherwise \$25 plus return of original disk; \$125 new.

MacProject II features hierarchical subproject consolidation, planned and actual date and cost status, 8 customizable resource calendars, 8 resources per task, more than 1500 resources per project, unlimited number of tasks using subproject consolidation, extended search capabilities for generation of custom reports, customizable project table. Single, multiple, or partial resource assignments, multiple task relationships, up to 16 attributes per task displayed in Schedule Chart. Color plotter output for up to size E plotter. Supports MultiFinder. Claris, 440 Clyde Ave., Mountain View, CA 94043, 415/960-1500. \$145; \$495 new.

MacWrite version 5.0 features a spelling checker with 100,000-word dictionary, a Select All command, and keyboard shortcuts for frequently used functions including Insert Ruler, Select All, New, Open, Close, Save, and Print. Allows cursor control with the arrow keys and supports large-screen monitors. MultiFinder compatible. Claris, 440 Clyde Ave., Mountain View, CA 94043, 415/960-1500. Free if version 4.6 purchased after December 14, 1987, otherwise \$25 plus return of original disk; \$125 new.

Market Manager Plus version 2.0 provides basic reporting and tracking capabilities needed by all investors and handles client information needed by professional investors. Expanded files accommodate 256 portfolios and 1800 open positions. Generates several portfolio reports, such as Holding, Security Cross-Reference, Realized Gain/Loss, Transaction and Portfolio Master. Also includes fields for client data; hypothetical portfolio

(continues)

Princeton LS-300 SCANNER

Critically Acclaimed...

"The PGS LS-300 is a competent image scanner that is compact, reasonably priced and extremely fast and easy to set-up and operate...The LS-300 will stand out as an excellent value."

Personal Computing, April 1987

"The ability to alter the image in detail using the zoom feature gives this product a big advantage over many other scanners that rely on screen grabbers or their own graphics editors...The LS-300 is a good candidate for users who want a general purpose scanner for desktop publishing."

PC Magazine, April 1987

Imagine being able to scan photos, graphics, and illustrations into your personal computer and being able to precisely position them in reports and proposals. Preview the graphic impact of charts and tables, modifying at will, before they appear in print on your laser printer.

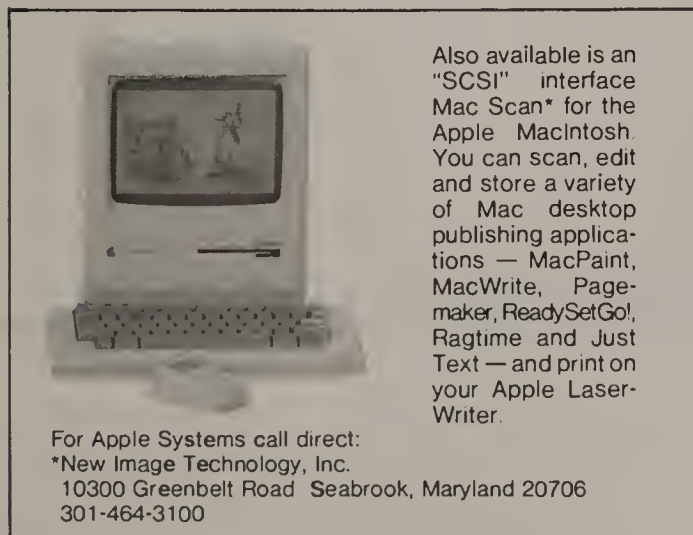
The *Princeton LS-300* allows you to scan a full page of text and images into your IBM PC/XT/AT or compatible at a laser-perfect 300 dots per inch in as fast as 12 seconds per page.

The LS-300 can be used with PC systems that utilize CGA, EGA or monochrome displays. Or team it up with the Princeton LM-300 Monitor, to allow you to view full page visual effects before printing. An optional trainable OCR software package enables your PC to read and store typewritten pages.

PC Paintbrush Plus Included!

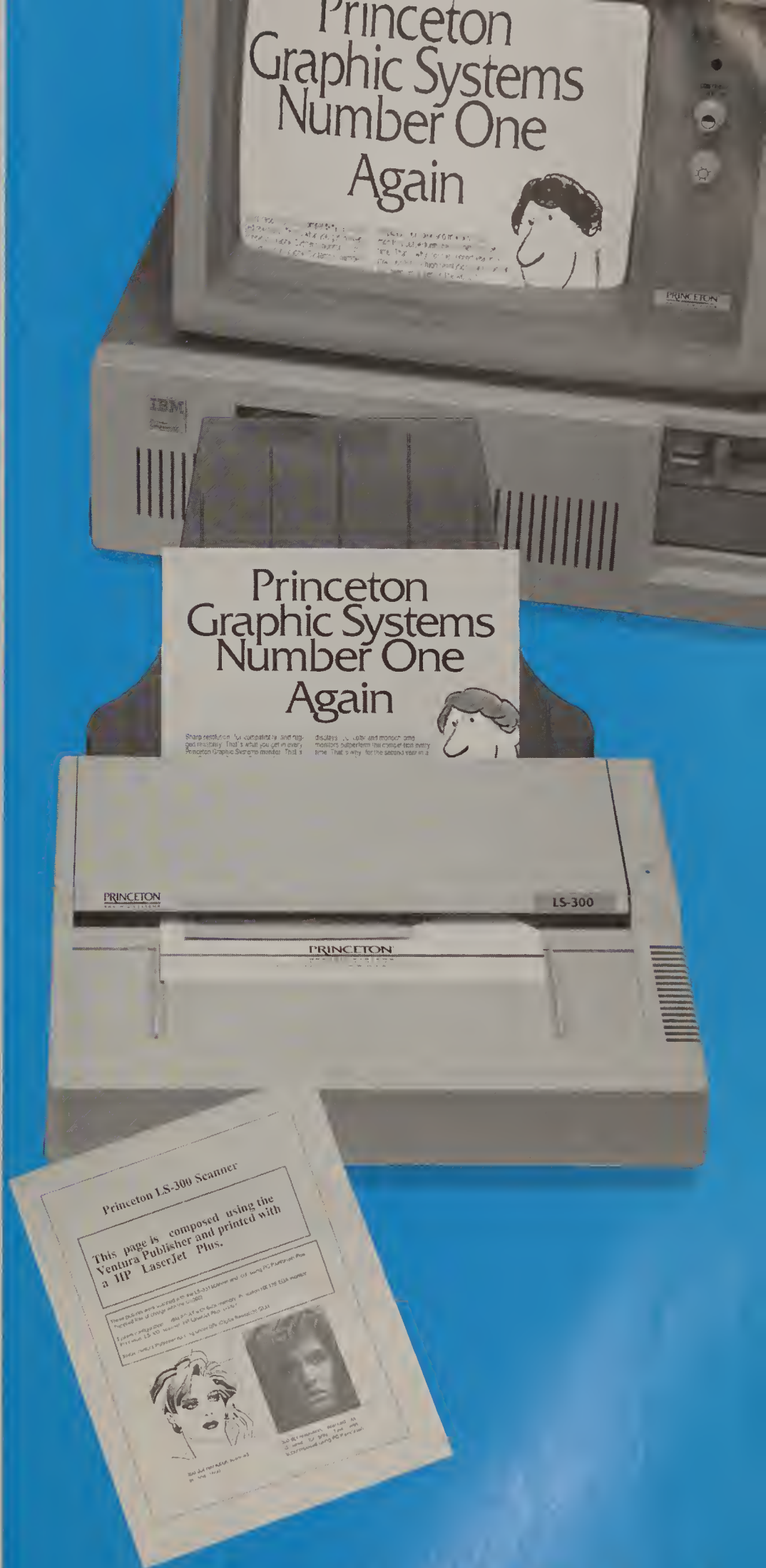
A \$149 retail value, the amazing PC Paintbrush Plus is included with the purchase of the LS-300 Scanner. The Paintbrush Plus lets you create image files, compatible with Ventura Publisher, Page Maker, etc. for professional-quality drawings, diagrams, charts, graphics, and headlines, with your mouse, joystick or digitizer. Manipulate images to create precisely the effect you want. Incorporate company logos, too!

Put a spark into your reports with the quick creative and productive LS-300. It's available with adapter board, PC Paintbrush Plus, and all cables, for a suggested retail price that's remarkably affordable, \$1,095.*



Also available is an "SCSI" interface Mac Scan* for the Apple Macintosh. You can scan, edit and store a variety of Mac desktop publishing applications — MacPaint, MacWrite, Page-maker, ReadySetGo!, Ragtime and Just Text — and print on your Apple Laser-Writer.

For Apple Systems call direct:
*New Image Technology, Inc.
10300 Greenbelt Road Seabrook, Maryland 20706
301-464-3100



PRINCETON
GRAPHIC SYSTEMS

601 Ewing Street, Building A, Princeton, NJ 08540

609-683-1660 Telex: 821402 PGS PRIN

Circle 90 on reader service card

REGISTERED TRADEMARKS: IBM, PC, XT, AT, International Business Machines, Inc. PC PAINTBRUSH PLUS, Z-Soft, VENTURA PUBLISHER, Xerox Corp. PAGEMAKER, Aldus, APPLE, MACINTOSH, MACPAINT, MACWRITE, Apple Computers, Inc. READY SET GO!, Manhattan Graphics, RAGTIME, Orange Micro Inc. JUST TEXT, Knowledge Engineering, Inc.

*FOR 110V VERSION

DOES WM. F. BUCKLEY, JR. REALLY NEED A THESAURUS?



His superior vocabulary makes you lean forward in your chair to keep up with him. If anyone could get by without a thesaurus, he could. But we have his letter praising our comprehensive, contemporary Word Finder. No big words, just a nice letter saying how much he liked it and uses it. Didn't mention the 220,000 synonyms for 15,000 words. Didn't say anything about how in just seconds Word Finder performs the whole cycle of look-up and replacement, so you continue writing without taking your eyes off the screen or your fingers off the keyboard. But he did say:

"It's a bloody miracle. Word Finder has changed my life. I never used to use a thesaurus." Wm. F. Buckley, Jr.

Word Finder installs as a desk accessory with all Macintosh software, and also supports MultiFinder™ and HyperCard™. Not copy protected.

*Mr. Buckley volunteered this statement about Word Finder, and is not being compensated for his endorsement.

Yes, please send me _____ Word Finders.

Word Finder™ \$59.95

(Plus \$2.50 shipping. NY residents add sales tax)

**Microlytics, Inc., 300 Main Street
Suite 134, E. Rochester, NY 14445**

© Copyright 1988, Microlytics, Inc.
Word Finder™ is a trademark of Microlytics, Inc.

☐ Visa ☐ MasterCard ☐ Amex ☐ Discover
☐ Check ☐ COD

Card # _____ Exp. Date ____ / ____

Name _____ Ph. _____

Company _____

Address _____

City _____ St. _____ Zip _____

**30 Day, Money-Back
Guarantee.**

To order or for more information,
please call: **(800) 828-6293**
In New York State: **(716) 377-0130**
Dealers please call

Circle 28 on reader service card

for "what if" scenarios; calendar of financial activity; securities grouped by industry for reporting; valuing portfolios for a selected date in the past year; and saving prices collected from News/Retrieval in SYLK format for spreadsheet analysis. Dow Jones Software, P.O. Box 300, Princeton, NJ 08543, 609/452-1511. \$124.50; \$299 new.

MathType version 1.50 provides a two-way interface between MathType and TeX. Design Science, 6475-B E. Pacific Hwy., #392, Long Beach, CA 90803, 213/433-0685. Free if purchased before January 1, 1988, otherwise \$25; \$149 new.

MicroChem version 2.0 improves performance and graphics in display mode. It also adds two units: GAP and Macromolecular Modeling. Intersoft, 1 Concourse Plaza, 4711 Golf Rd., #412, Skokie, IL 60076, 312/699-4143. Upgrade price depends on current configuration, please call for quotes; \$145 to \$495 new, depending on unit and qualification (academic/industrial).

MindWrite version 1.12 is fully compatible with MultiFinder. Access Technology, 555-C Heritage Harbor, Monterey, CA 93940, 408/642-0522, 800/367-4334. Free; \$195 new.

Netmodem and NetSerial version 1.46 are fully compatible with MultiFinder. Shiva Corp., 222 Third St., #1200, Cambridge, MA 02142, 617/661-2026. Free; Netmodem and NetSerial 1200 \$449 each new, Netmodem and NetSerial 2400 \$599 each new.

QuickKeys version 1.1 is fully MultiFinder compatible. Adds recorder and QuickPanel. Lets you access Open Set/Save Set, Cut/Copy/Paste commands, and a QuickKey editor from the DA menu. Ability to make a click function as an Option-click or Shift-click. Supports international systems. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. Free; \$99.95 new.

Scoop version 1.1 fixes bugs and prints larger documents on the Lino-tronic. Target Software, 14206 S.W. 136th St., Miami, FL 33186, 800/622-5483, 305/252-0892 in Florida. Free; \$495 new.

Stepping Out II adds such enhancements as fixed menu bar and palettes, 75 percent reductions, and the ability to change screen sizes while within an application. Features a new Control Panel user interface and screen view locking. Fully compatible with Mac II and MultiFinder. Berkeley System Design, 1708 Shattuck Ave., Berkeley, CA 94709, 415/540-5536. Free if previous version purchased after October 31, 1987, otherwise return original disk plus \$19.95; \$95 new.

WorksPlus Spell version 1.1A is fully compatible with Microsoft Works 1.1. Lundeen & Associates, P.O. Box 30038, Oakland, CA 94604, 415/893-7587. Free; \$79.95 new. □

To have products listed in this section, send upgraded software, an outline of major changes since the previous release, upgrade price, suggested retail price, company name, mailing address, and phone number to Updates, Macworld, 501 Second St., San Francisco, CA 94107.



When Your Mac Means Business... Get The Serious Business Backup.

Tecmar's QT-Mac40™

You've chosen the Macintosh™ for your business applications because of its sophisticated software, computing power and virtually unlimited disk capacity. Now choose the tape backup system that best protects your important data and keeps you in business.

speed and reliability you need for serious data security. Tecmar provides background backup mode, allowing you to back up while simultaneously running an application program. While its speed makes backup convenient, its small size and unique T-cable design provide the portability to share your QT-Mac40 with other Mac users.

replacement within 48 hours if you have a problem during your first six months of ownership.

So, get down to business with Tecmar's QT-Mac40. Call us now for more information at (216) 349-1009. Or write Tecmar, Inc., 6225 Cochran Road, Solon, Ohio 44139-3377.

Tecmar's QT-Mac40 vs. Apple's 40SC	Apple's 40SC	Tecmar's QT-Mac40
Speed	1MB/min.	2.5MB/min.
Portable	No	Yes
Warranty	90 days	2 years
Experience in Tape Backup	None	3 years
Price	More	Call Now

Serious Competition. The QT-Mac40 is faster and smaller than Apple's 40SC Tape Backup™ yet it's completely compatible.

Serious Performance. Tecmar's QT-Mac40, 40MB SCSI drive delivers the

Serious Experience. With over three years of backup experience and more than 100,000 satisfied users in the desktop computer market, Tecmar is the choice in business backup.

Serious Support. Our two-year warranty is your assurance of quality and reliability. And our special QuickTurn™ Quality Service guarantees that we'll ship a

TECMAR
The Power Behind Your Mac

QT-Mac40 and QuickTurn trademarks of Tecmar, Inc.; Macintosh trademark of McIntosh Laboratory, Inc.; licensed to Apple Computer, Inc.; Tape Backup 40SC trademark of Apple Computer, Inc.
© Copyright Tecmar, Inc., a subsidiary of Rexon, Inc. 1987 All rights reserved

Circle 143 on reader service card

SET 1

Fina By Image Club
FAINTBRUSH By Image
 Tipe By Image
 Castle By Image
 Sofa By Image
 LYRZ BY IMAGE
 Aria By Image
SCANNING

SET 4

CHEATER BY IMAGE CLUB
Signature By Image Club
FastLane By Image
 Calgary By Image Club
HEADLINER BY IMAGE
Italian By Image
IMAGE CLUB FONT BY
 rop caps

SET 2

Liberty By Image
RUBBER STAMP
MECHANICAL FONT
 Macintosh By Image Club
SurfStyle By Image
 Mini-pics
CHROME FONT

SET 5

AdSerif By Image
 GRAPHIK BY IMAGE CLUB
~~Font~~ By Image
 R O U K - A - B I L L
Sterling By Image
Casino By Image Club
 FREE Congratulations Memo SALE Headlines
 Daily Tribune By

SET 3

Comic BOOK By IMAGE
 Compacto Copy By Image Club
 Compacto Heads By Image Club
 Lunar By image
 Coble By Image Club
 Pipe By Image
Dyno By Image
SCORE BOARD

SET 6

114513 MICR Font
Champagne By Image Club
 QuilFont By Image Club
~~Font~~ By Image
 Coxtin By Image Club
 New Yorker By Image
Savage By Image Club
Neon By Image

TYPE

Quality typefaces for any PostScript compatible device such as LaserWriter or Linotronic. HotType works with any Macintosh or IBM PC (Ventura Publisher). This ad was created with PageMaker on a Macintosh and output on the Linotronic 300. Call for a free catalogue and poster - (403) 250-1969 and ask about Image Club's entire typeface collection on the AirFloor™ CD ROM 50 Megabyte laser disk and drive package for as little as \$59 per month!



Any 1 set	\$149	Any 4 sets	\$499
Any 2 sets	\$259	Any 5 sets	\$639
Any 3 sets	\$379	Any 6 sets	\$759

ORDER DESK • Add \$15 For Overnight Delivery
1-800-661-9410
 All credit cards accepted
 Individual fonts - \$34 ea.

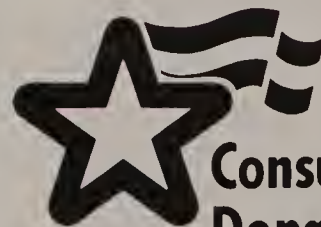


Image Club Graphics Inc
 Suite #206, 2915 - 19 St. N.E.
 Calgary, Alberta Canada
 T2E 7A2 403-250-1969

IT'S TIME TO GET OUT OF THE DARK.



Open your eyes and see just how many subjects are covered in the new edition of the Consumer Information Catalog. It's free just for the asking and so are nearly half of the 200 federal publications described inside. Booklets on subjects like financial and career planning; eating right, exercising, and staying healthy; housing and child care; federal benefit programs. Just about everything you would need to know. Write today. We'll send you the latest edition of the Consumer Information Catalog, which is updated and published quarterly. It'll be a great help, you'll see. Just write:



Consumer Information Center
Department TD
Pueblo, Colorado 81009

Where to Buy

This listing provides company addresses and phone numbers for products mentioned in this issue. Allow several weeks for responses to Reader Service Card inquiries. Asterisks indicate vendors who prefer to be contacted by phone.

Reader
Service

A

- 701 **Acta.** Symmetry Corp., 761 E. University Dr., Ste. C, Mesa, AZ 85203, 602/844-2199, 800/624-2485.
- 702 **AEC Information Manager.** AEC Management Systems, Inc., 20524 Amethyst Ln., Germantown, MD 20874, 301/428-3694.
- 703 **Apple File Exchange.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 704 **Apple High-Resolution Monochrome Monitor.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 705 **AppleShare.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 706 **AppleShare PC.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 707 **AppleTalk Custom Wiring Kit.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 708 **AppleTalk PC Card.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 709 **Apple 2MB Memory Expansion Kit.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 710 **AST-ICP.** AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714-4992, 714/553-0340.

B

- 711 **Big Picture.** E-Machines Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005, 503/646-6699.
- 712 **Big Picture IQ.** E-Machines Inc., 9305 S.W. Gemini Dr., Beaverton, OR 97005, 503/646-6699.

C

- 713 **CADMover.** Kandu Software Corp., 2305 N. Kentucky St., Arlington, VA 22205, 703/532-0213.
- 714 **Cat Mac.** Phenix Specialties, Inc., 2981 Corvin Dr., Santa Clara, CA 95051, 408/733-9625.
- 715 **Coach Merriam-Webster Thesaurus.** Deneba Software, 7855 N.W. 12th St., #202, Miami, FL 33126, 305/594-6965, 800/622-6827.
- 716 **ColorBoard 1/104.** RasterOps Corp., 10161 Bubba Rd., Cupertino, CA 95014, 408/446-4090.
- 717 **Colorizer.** Palomar Software, Inc., P.O. Box 120, Oceanside, CA 92054, 619/721-7000.
- 718 **ColorVue SE.** Orchid Technology, 45365 Northport Loop W, Fremont, CA 94538, 415/683-0300.
- 719 **ComServe.** Infosphere, Inc., 4730 S.W. Macadam Ave., Portland, OR 97201, 503/226-3620, 800/445-7085.
- 720 **Concentrator.** Du Pont Electronics, 515 Fishing Creek Rd., New Cumberland, PA 17070, 717/938-7683, 800/237-2374.
- 721 **Converter.** Du Pont Electronics, 515 Fishing Creek Rd., New Cumberland, PA 17070, 717/938-7683, 800/237-2374.
- 722 **C-Server.** Solana Electronics, 7887 Dunbrook Rd., Ste. A, San Diego, CA 92126, 619/566-1701.

D

- 723 **dBase Mac.** Ashton-Tate Corp., 20101 Hamilton Ave., Torrance, CA 90502-1319, 213/329-8000.
- 724 **Détente Reports.** WOS Data Systems, 1321 Wakarusa Dr., #2010, Lawrence, KS 66044, 913/843-8101.
- 725 **DiskQuick.** Ideaform, Inc., P.O. Box 1540, 612 W. Kirkwood, Fairfield, IA 52556, 515/472-7256.
- 726 **Disk Ranger.** Graham Software Co., 8609 Ingalls Circle, Arvada, CO 80003, 303/422-0757.
- * **DiskTools II (bundled with DiskTools Plus).** Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171.
- 727 **DiskTop.** CE Software, Inc., P.O. Box 65580, West Des Moines, IA 50265, 515/224-1995.
- 728 **Draw It Again, Sam . . .** Aha Software Inc., P.O. Box 850, Frazer, PA 19355-0915, 215/644-3580, 800/234-0230.

E

- * **Electra Guard 3+.** CPS Electronics, Inc., 4151 112th Terrace N, Clearwater, FL 34622, 813/578-1600, 800/237-6010.
- * **Electra Guard 5.** CPS Electronics, Inc., 4151 112th Terrace N, Clearwater, FL 34622, 813/578-1600, 800/237-6010.
- * **Electra Guard 20.** CPS Electronics, Inc., 4151 112th Terrace N, Clearwater, FL 34622, 813/578-1600, 800/237-6010.
- 729 **EtherPort SE.** Kinetics, Inc., 2500 Camino Diablo, Walnut Creek, CA 94596, 415/947-0998.
- 730 **EtherPort II.** Kinetics, Inc., 2500 Camino Diablo, Walnut Creek, CA 94596, 415/947-0998.
- 731 **EtherSC.** Kinetics, Inc., 2500 Camino Diablo, Walnut Creek, CA 94596, 415/947-0998.
- 732 **Expressionist.** Allan Bonadio Associates, 1579 Dolores St., #24, San Francisco, CA 94110-4928, 415/282-5864.

Where to Buy

Reader
Service

F

- 733 **FastNet.** Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405, 919/763-7918, 800/622-7627.
 734 **FastPath.** Kinetics, Inc., 2500 Camino Diablo, Walnut Creek, CA 94596, 415/947-0998.
 735 **FastPath 3.** Kinetics, Inc., 2500 Camino Diablo, Walnut Creek, CA 94596, 415/947-0998.
FileTree. Shareware by Jody Kravitz.
 736 **Findswell.** Working Software, Inc., 321 Alvarado St., Ste. H, Monterey, CA 93940, 408/375-2828, 800/331-4321, 800/851-1986 in California.
 737 **4th Dimension.** Acius, 20300 Stevens Creek Blvd., #495, Cupertino, CA 95014, 408/252-4444.
 738 **Full Page Display for the Macintosh II.** Radius, Inc., 404 E. Plumeria Dr., San Jose, CA 95134, 408/434-1010.

G

- 739 **Giga Tower.** NuData Inc., 4201 Burton Dr., Santa Clara, CA 95054, 408/727-1049, 800/832-8268.

H

- HFS Dir.** Shareware by OITC.
 740 **HFS Locator Plus.** PBI Software, Inc., 1163 Triton Dr., Foster City, CA 94404, 415/349-8765.
 741 **HFS Navigator.** Symantec Corp., 135 South Rd., Bedford, MA 01730, 617/275-4800, 800/648-4465.
 742 **HyperCard.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.

I

- 743 **ImageWriter LQ.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
 744 **InBox for the Macintosh.** Symantec Corp., 135 South Rd., Bedford, MA 01730, 617/275-4800, 800/648-4465.
 745 **InBox/PC.** Symantec Corp., 135 South Rd., Bedford, MA 01730, 617/275-4800, 800/648-4465.
 746 **Inside Out.** Shana Enterprises Inc., 9704 54th Ave., #200, Edmonton, Alberta, Canada T6E 0A9, 403/438-6548.
 747 **InterBridge.** Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348, 404/441-1617.
 748 **Interleaf Publisher.** Interleaf, Inc., Ten Canal Park, Cambridge, MA 02141, 617/577-9800.
 * **IPT NetRepeater.** Information Presentation Technologies, Inc., P.O. Box 8609, Calabasas, CA 91302, 818/347-7791.
 749 **I-Server.** Solana Electronics, 7887 Dunbrook Rd., Ste. A, San Diego, CA 92126, 619/566-1701.

J

- * **Jam Session.** Brøderbund Software, Inc., 17 Paul Dr., San Rafael, CA 94903-2101, 415/492-3200.

Nouveau
 Fletcher Gothic
 VERTIGO
 Cut Outs
 Hobnob
 MICHELLE
 Kasse

**Perfected
 PostScript®
 FONTS**

Complementary Type™

FATTI PATTI
 Calculus
 Peruta Medium
 Peruta Light
 Highland Gothic
 H.G. Light
 100s of Borders

- Automatic download
- Extensive kerning pairs
- Alternate characters
- Designer ready
- Meets corporate communications standards

Also Available: Custom logo and signature service:

Logos On Line

717-491-2492/95
Call Today

**Software
 Complement**



8 Pennsylvania Avenue
 Matamoras, PA 18336

Immediate Shipping via
 UPS (ground, 2day or 1day)

Visa and MasterCard Accepted



**Insurance
 For
 Fried
 Apples?**

When your surge protector fails will your insurance save you? SAFEWARE® computer insurance covers power surges, lightning, theft, fire, accidental damage and more! Full replacement of hardware, media and purchased software for as little as \$39 per year.

Total Value, Hardware, Media & Purchased Software	Annual Premium
up to \$2,000	\$ 39
\$ 2,001-\$ 5,000	\$ 69
\$ 5,001-\$ 8,000	\$ 89
\$ 8,001-\$11,000	\$109
\$11,001-\$14,000	\$129

For immediate coverage, information
 and rates on higher coverages, call

1-800-848-3469

Locally 614-262-0559 On Compuserve, GO SAF



SAFEWARE, The Insurance Agency Inc.
 2929 N. High St., P.O. Box 02211, Columbus, OH 43202

Circle 153 on reader service card

Circle 293 on reader service card



- 750 **LaserServe.** Infosphere, Inc., 4730 S.W. Macadam Ave., Portland, OR 97201, 503/226-3620, 800/445-7085.
- 751 **LaserServer.** DataSpace Corp., 185 Riviera Dr., Unit 9, Markham, Ontario, Canada L3R 5J6, 416/474-0113, 800/387-0492.
- 752 **LaserShare.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 753 **LaserSpeed.** Symantec Corp., 135 South Rd., Bedford, MA 01730, 617/275-4800, 800/648-4465.
- 754 **LaserView Display System.** Sigma Designs, 46501 Landing Pkwy., Fremont, CA 94538, 415/770-0100.
- 755 **LocalTalk Locking Cable Kit—10 Meter.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 756 **LocalTalk Locking Connector Kit—DB9.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 757 **LocalTalk Locking Connector Kit—DIN8.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- Locare.** Shareware by Raymond Lau.



- 758 **M.** Intelligent Computer Music Systems, Inc., P.O. Box 8748, Albany, NY 12208, 518/434-4110.
- * **MacAccess.** Inventab, Dälbyvägen 3, S223 60 Lund, Sweden, (0)46/13 51 80.
- 759 **Maccessories Control Center.** Kensington Microware Ltd., 251 Park Ave. S, New York, NY 10010, 212/475-5200, 800/535-4242.
- 760 **Maccessories Surge Suppressor.** Kensington Microware Ltd., 251 Park Ave. S, New York, NY 10010, 212/475-5200, 800/535-4242.
- 761 **MacCracker.** Icon Review, P.O. Box 911, Dept. CT097, Monterey, CA 93942, 408/625-0465.
- 762 **Macintosh II EtherTalk Interface Card.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.
- 763 **MacLinkPlus.** DataViz Inc., 16 Winfield St., Norwalk, CT 06855, 203/866-4944.
- 764 **MacMail.** Aegis Development, Inc., 2210 Wilshire Blvd., #277, Santa Monica, CA 90403, 213/392-9972, 800/345-9871.
- 765 **MacOpener.** Central Products Corp., P.O. Box 980305, Houston, TX 77098, 713/529-1080.
- 766 **MacServe.** Infosphere, Inc., 4730 S.W. Macadam Ave., Portland, OR 97201, 503/226-3620, 800/445-7085.
- 767 **MacSnap 2S/2H.** Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405, 919/763-7918, 800/622-7627.
- 768 **MacSnap 4S/4H.** Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405, 919/763-7918, 800/622-7627.
- 769 **Mac286.** AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714-4992, 714/553-0340.

Prevent Macintosh Theft!



MacKablit System

Heavy duty 10' steel cable (7 x 19) secures and locks computer, printer, other equipment, up to 4 components. The unique MacKablit system includes 2 brackets that snap into existing slots on the Macintosh keyboard and computer. Additional hardware included for other Mac peripherals (disk drive, printers). The unique MacKablit system utilizes exist-

ing security slots on the keyboard and computer and existing screws in other peripheral equipment. The system includes 2 brackets for the security slots plus unique Kablit fasteners for peripherals. Cable passes through Kablit fasteners, preventing removal of screws.

EXCLUSIVE!

Proprietary components (Pat. Pend.) permit only your key to release MacKablit. When ordering multiple units, specify locks to be keyed differently or alike. Specify Mac, Mac Plus SE, or Mac II.

Other Kablit systems for IBM, Apple, others.



\$39.95 + \$3.00 shipping/handling

Quantity pricing also available for multiple purchases from schools, institutions, businesses, industrials, etc. Send P O



**Money back if returned
in 30 days.
Phone or send check.**

Secure-It, Inc.

10 Center Square
East Longmeadow, MA 01028
800-451-7592 413-525-7033
Dealer Inquiries Invited

Circle 239 on reader service card

THE FOLLOWING
ARE A FEW THINGS
YOU CAN CHOOSE FROM
WHEN YOU CHOOSE A
TI OMNILASER™ PRINTER.


**TEXAS
INSTRUMENTS**

OmniLaser is a trademark of Texas Instruments Incorporated.

Where to Buy

Reader
Service

- 770 **MailBox.** Tangent Technologies, Ltd., 5720 Peachtree Pkwy., #100, Norcross, GA 30092, 404/662-0366.
- 771 **Mail Center.** Videx, Inc., 1105 N.E. Circle Blvd., Corvallis, OR 97330, 503/758-0521.
- 772 **MathTalk.** First Byte, Inc., 3333 E. Spring St., #302, Long Beach, CA 90806, 213/595-7006.
- 773 **MathTalk Fractions.** First Byte, Inc., 3333 E. Spring St., #302, Long Beach, CA 90806, 213/595-7006.
- 774 **Math Wizard.** Unicorn Software Co., 2950 E. Flamingo Rd., Greenview Plaza, Ste. B, Las Vegas, NV 89121, 702/737-8862.
- 775 **MathWriter.** Cooke Publications, P.O. Box 4448, Ithaca, NY 14852, 607/272-2708, 800/482-4438 ext. 15, 800/435-4438 ext. 15 in New York.
- 776 **MaxPlus Mega.** MacMemory, Inc., 2480 N. First St., San Jose, CA 95131, 408/922-0140, 800/862-2636.
- 777 **MDC II.** New Canaan Microcode, 136 Beech Rd., New Canaan, CT 06840, 203/966-6969.
- 778 **MegaScreen 2001.** MegaGraphics, Inc., 20954 Osborne St., Canoga Park, CA 91304, 818/407-0571.
- 779 **MegaTalk Plus.** MegaGraphics, Inc., 20954 Osborne St., Canoga Park, CA 91304, 818/407-0571.
- MFMenu.** Public domain software by IMI Software.
- 780 **Micro Dynamics MARS.** Micro Dynamics, Ltd., 8555 16th St., #802, Silver Spring, MD 20910, 301/598-6300, 800/634-7638.
- 781 **Microsoft Excel.** Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400.
- 782 **Microsoft Mail.** Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400.
- 783 **Microsoft Write.** Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400.
- 784 **Mini Power Control.** Relax Technology, 3101 Whipple Rd., #22, Union City, CA 94587, 415/471-6112, 800/848-1313.
- 785 **ModemShare.** Mirror Technologies, Inc., 2644 Patton Rd., Roseville, MN 55113, 612/633-4450.
- 786 **Modern Artist.** Computer Friends, Inc., 14250 N.W. Science Park Dr., Portland, OR 97229, 503/626-2291.
- 787 **MultiSIMMs.** MacMemory, Inc., 2480 N. First St., San Jose, CA 95131, 408/922-0140, 800/862-2636.
- 788 **MultiTalk.** Abaton, 48431 Milmont Dr., Fremont, CA 94538, 415/683-2226.
- 789 **Multi-User Appointment Diary with Smart Alarms.** Imagine Software, 19 Bolinas Rd., Fairfax, CA 94930, 415/453-3944.
- 790 **MultiUser Helix.** Odesta Corp., 4084 Commercial Ave., Northbrook, IL 60062, 312/498-5615, 800/323-5423.
- Multi Word Counter.** Shareware by Andrew E. Page.



TI OmniLaser Printers:

SPEEDS.

6 Pages/Minute
8 Pages/Minute
15 Pages/Minute

TEXAS
INSTRUMENTS

Ad
Council



United Way

It brings out the best
in all of us.™

©1987 UNITED WAY

N

- 791 **NetBridge.** Shiva Corp., 222 Third St., #1200, Cambridge, MA 02142, 617/661-2026, 800/458-3550.
 792 **NetModem V1200.** Shiva Corp., 222 Third St., #1200, Cambridge, MA 02142, 617/661-2026, 800/458-3550.
 793 **NetSerial X232.** Shiva Corp., 222 Third St., #1200, Cambridge, MA 02142, 617/661-2026, 800/458-3550.
 794 **Network Card Plus.** Hercules Computer Technology, 921 Parker St., Berkeley, CA 94710, 415/540-6000.

O

Oasis. Shareware by Jan Eugenides.

- 795 **Omnis 3 Plus/Express Multi-User.** Blyth Software, Inc., 1065 E. Hillsdale Blvd., Foster City, CA 94404, 415/571-0222.
 * **One Plus One.** SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884.

P

- 796 **PanChroma CHC-335.** Computer Friends, Inc., 14250 N.W. Science Park Dr., Portland, OR 97229, 503/626-2291.
 797 **Passive Star Wiring Kit.** Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331.
 798 **PC MacBridge ATB.** Tangent Technologies, Ltd., 5720 Peachtree Parkway, #100, Norcross, GA 30092, 404/662-0366.
 799 **PC MacBridge Plus.** Tangent Technologies, Ltd., 5720 Peachtree Parkway, #100, Norcross, GA, 30092, 404/662-0366.
 800 **PC MacServe.** Tangent Technologies, Ltd., 5720 Peachtree Parkway, #100, Norcross, GA 30092, 404/662-0366.
 801 **PC MacTxt.** Tangent Technologies, Ltd., 5720 Peachtree Parkway, #100, Norcross, GA 30092, 404/662-0366.
 802 **PhD.** Century Data, Inc., 1270 North Kraemer Blvd., Anaheim, CA 92806, 714/632-7500.
 803 **PhoneNet CheckNet.** Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331.
 804 **PhoneNet Plus Connector.** Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331.
 805 **PhoneNet Repeater.** Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331.
 806 **PhoneNet StarController with StarCommand Software.** Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331.
 807 **PhoneNet to AppleTalk Adapter.** Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331.
 808 **PictureBase Network Package.** Symmetry Corp., 761 E. University Dr., Ste. C, Mesa, AZ 85203, 602/844-2199, 800/624-2485.
 * **PixelPaint.** SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-9694.
 809 **Power Control 2.** Relax Technology, 3101 Whipple Rd., #22, Union City, CA 94587, 415/471-6112, 800/848-1313.
 810 **Power Control 3.** Relax Technology, 3101 Whipple Rd., #22, Union City, CA 94587, 415/471-6112, 800/848-1313.

HOW THIS RAKE CAN SAVE YOUR LIFE



This simple garden tool is a firefighter. It can help you clear away brush and leaves that act like kindling around your home. And you.

So if you live near the forest, do a little raking. And that's not all. Landscape your home with a fire retardant plant like ivy. Use spark arrester screens on your chimney and vents. And put fire retardant material on your roof and

underneath your house where it is exposed. Because a forest fire burns more than trees.



Remember. Only you can prevent forest fires.

TI OmniLaser Printers:

CONNECTIVITY.

IBM® PC, PC XT™, PC AT®, PS/2™,
 System 34/36/38, System 3270,
 DEC® VAX™,
 Apple® Macintosh™,
 Macintosh II,
 microExplorer,
 Texas Instruments
 System 1000 and
 many more.



**TEXAS
INSTRUMENTS**

The following are registered and unregistered trademarks of the companies listed: IBM, PC XT, PC AT, PS/2, International Business Machines, Inc.; DEC, VAX, Digital Equipment Corporation; Apple, Macintosh, Apple Computer, Inc.

Where to Buy

Reader
Service

- 811 **Power Control 4.** Relax Technology, 3101 Whipple Rd., #22, Union City, CA 94587, 415/471-6112, 800/848-1313.
- 812 **PowerStation.** Software Supply, 599 N. Mathilda Ave., #210, Sunnyvale, CA 94086-3504, 408/749-9311.
- Q**
- 813 **Q-Talk.** LaserConnection, Inc., P.O. Box 850296, Mobile, AL 36685, 205/633-7223.
- 814 **Rembrandt II.** Jasmine Technologies, Inc., 555 De Haro St., San Francisco, CA 94107, 415/621-4339.
- 815 **Rembrandt III.** Jasmine Technologies, Inc., 555 De Haro St., San Francisco, CA 94107, 415/621-4339.
- 816 **R-Server.** Solana Electronics, 7887 Dunbrook Rd., Ste. A, San Diego, CA 92126, 619/566-1701.
- S**
- 817 **SONAR Text Retrieval System.** Virginia Systems Software Services, Inc., 5509 West Bay Ct., Midlothian, VA 23112, 804/739-3200.
- * **Spectrum/24.** SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884.
- 818 **Spelling Coach.** Deneba Software, 7855 N.W. 12th St., #202, Miami, FL 33126, 305/594-6965, 800/622-6827.
- 819 **Spelling Coach Professional.** Deneba Software, 7855 N.W. 12th St., #202, Miami, FL 33126, 305/594-6965, 800/622-6827.
- * **SuperLaserSpool.** SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-9694.
- 820 **System Saver Mac.** Kensington Microware Ltd., 251 Park Ave. S, New York, NY 10010, 212/475-5200, 800/535-4242.
- T**
- 821 **TangentShare.** Tangent Technologies, Ltd., 5720 Peachtree Pkwy., #100, Norcross, GA 30092, 404/662-0366.
- 822 **TangentShare Bundle.** Tangent Technologies, Ltd., 5720 Peachtree Pkwy., #100, Norcross, GA 30092, 404/662-0366.
- 823 **TangentSpool.** Tangent Technologies, Ltd., 5720 Peachtree Pkwy., #100 Norcross, GA 30092, 404/662-0366.
- 824 **3+ for the Macintosh.** 3Com Corp., 3165 Kifer Rd., Santa Clara, CA 95052, 408/562-6400.
- 825 **3S/200.** 3Com Corp., 3165 Kifer Rd., Santa Clara, CA 95052, 408/562-6400.
- 826 **3S/201.** 3Com Corp., 3165 Kifer Rd., Santa Clara, CA 95052, 408/562-6400.
- 827 **Timbuktu.** WOS Data Systems, 1321 Wakarusa Dr., #2010, Lawrence, KS 66044, 913/843-8101.
- 828 **TOPS/DOS.** TOPS, A Sun Microsystems Company, 2560 Ninth St., #220, Berkeley, CA 94710, 415/549-5900.
- 829 **TOPS FlashCard.** TOPS, A Sun Microsystems Company, 2560 Ninth St., #220, Berkeley, CA 94710, 415/549-5900.
- 830 **TOPS/Macintosh.** TOPS, A Sun Microsystems Company, 2560 Ninth St., #220, Berkeley, CA 94710, 415/549-5900.

TI OmniLaser Printers:

APPLICATIONS SOFTWARE.

Desktop Publishing:

PageMaker™ and Ventura™;

Word Processing:

Word, WordPerfect®
and WordStar 2000;

Graphics:

AutoCAD™ and
Adobe Illustrator®;

General Business:

Lotus® 1-2-3®, GEM® Draw
Plus™, GEM Graph™, Windows
and thousands more.


TEXAS
INSTRUMENTS

HOW DO YOU GET A JOB WITHOUT EXPERIENCE? AND HOW DO YOU GET EXPERIENCE WITHOUT A JOB?

Most young people have one answer to this problem. They avoid it until they're out of college. But they could be getting solid work experience while they're still in college. With your company's help. And ours.

We're Co-op Education. A nationwide program that helps college students get real jobs for real pay, while they're getting an education.

But we can't do it without you. Those real jobs have to

come from real companies. Like yours.

For more information on how you can participate in this valuable program, write Co-op Education, Box 775E, Boston, MA 02115.

Not only will you be giving students a chance to earn money and pick up the most valuable kind of knowledge, you'll be giving yourselves a chance to pick up the most valuable kind of employee.

Co-op Education.

You earn a future when you earn a degree.

The following are registered and unregistered trademarks of the companies listed: PageMaker, Aldus Corporation; Ventura, Xerox Corporation; WordPerfect, WordPerfect Corporation; AutoCAD, Autodesk, Inc.; Adobe Illustrator, Adobe Systems Incorporated; Lotus, 1-2-3, Lotus Development Corporation, GEM, Draw Plus, Graph, Digital Research, Inc.

- 831 **TOPS NetPrint.** TOPS, A Sun Microsystems Company, 2560 Ninth St., #220, Berkeley, CA 94710, 415/549-5900.
 832 **TOPS Repeater.** TOPS, A Sun Microsystems Company, 2560 Ninth St., #220, Berkeley, CA 94710, 415/549-5900.
 833 **TrafficWatch.** Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331.
TranslatorDA. Shareware by Edward L. Bolson.
 834 **TurboNet.** Nuvotech, Inc., 2015 Bridgeway, #204, Sausalito, CA 94965, 415/331-7815.
 835 **TurboNet Adapter.** Nuvotech, Inc., 2015 Bridgeway, #204, Sausalito, CA 94965, 415/331-7815.

V

- 836 **Viking G/S.** Moniterm Corp., 5740 Green Circle Dr., Minnetonka, MN 55343, 612/935-4151.

W

- 837 **WorksPlus Command.** Lundeen & Associates, P.O. Box 30038, Oakland, CA 94604, 415/893-7587, 800/233-6851, 800/922-7587 in California.
 838 **WOSbase.** WOS Data Systems, 1321 Wakarusa Dr., #2010, Lawrence, KS 66044, 913/843-8101.
 839 **WriteNow.** T/Maker Co., 1973 Landings Dr., Mountain View, CA 94043, 415/962-0195.

Z

- 840 **ZX-5000/4.** Sutton Designs Inc., 300 N. Tioga St., Ithaca, NY 14850, 607/277-4301. □

Public Domain/Shareware. Available through online information services; user groups (call 800/538-9696 ext. 500 for information on a local user group); or mail-order clearinghouses such as Budgetbytes (800/356-3551 for orders, 913/271-6022 in Kansas), Educomp (800/843-9497, 619/259-0255 in California), or the Public Domain Exchange (800/331-8125, 408/496-0624 in California).

DON'T READ THIS AD!

Unless you are interested in great software at modest prices.

HYPERCARD STACKS

- Free Technical Support
- 4 years in business!
- We ship in 24 hours.
- Toll Free 800 line for ordering

- | | | |
|-------------------------------|--|-----|
| <input type="checkbox"/> HC1 | Business: 3 calculators, address filer, talking secretary | \$9 |
| <input type="checkbox"/> HC2 | Personal Productivity: Chckbk, software & LP organizer | \$9 |
| <input type="checkbox"/> HC3 | Modem: BBS lists, terminal progs, MAUG & GENie file lists | \$9 |
| <input type="checkbox"/> HC4 | Sound/Speech: 10 Common Sounds, synthesizer, HyperMacintalk, sound utilities | \$9 |
| <input type="checkbox"/> HC5 | Fun: Adlibs, animation, Star Trek, HyperGunshy, Tic Tac Toe | \$9 |
| <input type="checkbox"/> HC6 | Education: Electronics, chemistry, geography & biology | \$9 |
| <input type="checkbox"/> HC7 | Utilities and Programming: Stack protection crackers, guide to HC programming, more | \$9 |
| <input type="checkbox"/> HC8 | FunStuff: Screen Savers, cartoons, pranks, more | \$9 |
| <input type="checkbox"/> HC9 | Graphics: Excellent sketchings and sound animation | \$9 |
| <input type="checkbox"/> HC10 | Games: Sword playing, 56 World Class Chess games | \$9 |

Best of Public Domain

- ☐ 86 Communications, utilities, games, DA's \$9

MacUser/MacWorld Editors' Choices

- ☐ 106,119 ScreenWreckers/Savers/pranks (2 disks) \$18

Business

- ☐ 76 PageMaker 1.2—40 templates \$9
☐ 135 Best of Business, Home Finance \$9
☐ 163 Dbases: mail, inventory, real estate \$9

Communication

- ☐ 29 Red Ryder 9.4 term prog w/doc (shareware) \$9

Desk Accessories

- ☐ 102 Best DA's—utils, modem, Transfer \$9
☐ 168 Use Fonts, Fkeys, DA's w/o install \$9

Fonts

- ☐ 90 Boston II—laser quality on Imagewriter \$9
☐ 133 Beverly Hills—Sharpest, Imagewriter \$9

Games

- ☐ 62 Dungeon of Doom: Adventure game \$9
☐ 103 Best Games—Billiards, Megaroids \$9
☐ 126 Star Trek with sound & graphics \$9
☐ 182 Ten pinball games w/pinball player \$9

Graphics

- ☐ 116,117 Clipboard art, Slideshow, (2 disks) \$18

Nudes

- ☐ 49,66 Girls' Adults only pictures (2 disks) \$18

Programming

- ☐ 166 Complete Sesame C compiler \$9
☐ 195 Simple Tools: C language libraries \$9

Science

- ☐ 154 Earthplot—draw detailed 3D globes \$9

Utilities

- ☐ 6,89 ResEdit: edit fonts & icons (2 disks) \$18
☐ BOOK: 150 pg. directory of disks \$7.95
☐ 1 Yr. Membership: book, quarterly magazines, plus many discounts \$20

SPECIALS

- ☐ Any 3 disks plus 1 year membership \$39⁹⁵
 (Includes book, magazine + many discounts)
☐ Any 6 disks* \$39
☐ Any 10 disks* \$59
 *Specials expire May 15, 1988
 Add \$4 shipping and handling to special prices

Add \$4 (\$10 foreign) for shipping & handling or \$2 (\$5 foreign) if ordering book only. CA orders add sales tax.

Enclosed \$_____ by ☐ Check ☐ VISA ☐ MC

Card No. _____ Exp. _____

Name _____

Address _____

City _____ State _____ Zip _____

THE PUBLIC DOMAIN 2074C Walsh Ave., Dept. 115
 EXCHANGE Santa Clara, CA 95050

ORDER NOW! 800-331-8125
In CA 408-496-0624

TI POSTSCRIPT® PRINTERS. THE CHOICES ARE ALL YOURS.

TI's OmniLaser Printers work with your choice of hardware, using your choice of software, at your choice of speed. Select any one of these fine printers, and you'll have a variety of capabilities from which to choose. That's because every OmniLaser features multiple emulations, typefaces, paper handling options and more.

Select TI's new OmniLaser 2106 if you need a versatile work-station printer with a 3,000-page-per-month capacity. Or, for small

cluster environments requiring higher duty cycle and up to eight-page-per-minute speed, choose the OmniLaser 2108. Finally, if you're sharing resources and need a powerhouse machine to print 25,000 pages per month at up to 15 pages per minute, the OmniLaser 2115 is the one for you.

Whatever your printing needs, pick up the phone and call Texas Instruments.

We'll help you pick the OmniLaser that's right for you.

Call toll-free, 1-800-527-3500.



**TEXAS
INSTRUMENTS**

36155

© 1988 TIOmniLaser is a trademark of Texas Instruments Incorporated. PostScript is a registered trademark of Adobe Systems Incorporated.

Circle 335 on reader service card

Welcome to our 1-800-421-3135

Phone Hours: Monday, Wednesday & Thursday
7 am - 9 pm; Tuesday & Friday 7 am - 5 pm;
Saturday 9 am - 5 pm MST.



2701 W. Glendale Ave. • Phoenix, AZ 85051

new Mac House

FAX #: (602) 246-7805
Order Line—1-800-421-3135
Order Status and
Technical Support
602-246-2222

Accounting

Migent In House Accountant	Call
Monogram Dollars & Sense	81
Peachtree Software Accounting System (3 pack)	129
Softsync Personal Accounting	29

Entertainment

Avalon Hill MacPro Football	28
Electronic Arts	
Chessmaster 2000	30
Deluxe Music Cont	63
One On One	16
Patton vs. Rommel	27
Scrabble	39
Seven Cities of Gold	16
Holobyte Falcon	32
Infocom Beyond Zork	32
Lurking Horror	28
Mindscape Balance of Power	30
Deja Vu	29
King of Chicago	29
Sierra On Line	
Championship Boxing	28
Silicon Beach	
Beyond Dark Castle	28
Dark Castle	28
Enchanted Scepters	22

Statistical Analysis

Borland Eureka	119
Brainpower Statview 512+	179

Disk Drives/ Hard Drives

Fast-20	859
20MB hard disk drive	
Central Point 800K 3.5" Drive	185
General Computer Corp.	
HyperDrive FX/20	649
20MB ext. hard disk	
HyperDrive FX/40	909
HyperDrive F1/40	909
40MB int. hard disk for MAC SE	
HyperTape Platinum Kit	998
40MB SCSI tape drive	

Communication

Centram Tops	125
Dataviz MacLink Plus	
w/cable	155
Palantir Software Intalk	105
Hayes Smartcom II	88

Utilities

Central Point Copy II Mac	21
FGS Fastback	55
Silicon Beach Silicon Press	45
Word Builder	45
Supermac Diskfit	45
Superspool	45
Superspool Laser	85
Superspool Multiuser	210

Input/Output

CH Product Mach IV Joystick	45
Flight Gate Felix	99
General Computer Corp.	
Personal Laser Printer	1449
Kensington Turbo Mouse	85
Koala MacVision	175
Kraft Quick Stick III	39
Sigma Designs	
LaserView 15"	1345
for the MAC SE	
LaserView 19"	1715
for the MAC SE	
LaserView 15"	1419
for the MAC II	
LaserView 19"	1780
for the MAC II	
Summagraphics Mac Tablet	379

Database

Ashton Tate dBASE Mac	299
Borland Reflex Plus	159
Forethought Filemaker Plus	159
Microsoft File	Call
Nantucket McMax	169
Odesta Double Helix	275
Double Helix II	340
Multi User Kit	Call
Provue Overvue 2.1	149

Graphics

Ann Arbor Full Paint	55
Borderbund Printshop	35
Videoworks 2	115
Cricket—Cricket Draw	159
Cricket Graph	112
Cricket Chart	Call
Mindscape Graphic Works 1.1	59
Silicon Beach Super Paint	78
Soft Style Bluestart	29
Colormate 2.1	49
Epstart	29
Jetstart	29
Springboard Certificate Maker	25
Super Mac Pixel Paint	252
T-Maker	
Click Art Business Image	29
Click Art Effects	29
Click Art Personal Graphics	29
Click Art Publications	29

Word Processors/ Spellers

Aegis Development	
Doug Clapps Word Tools	49
Ann Arbor Fullwrite	195
Batteries Included	
Thunder	32
Living Videotext More 1.1C	179
Microsoft Word 3.01	Call
T-Maker Writenow	100
Working Software	
Spellswell	42

Worksheets

Batteries Included	
Timelink	42
Multiplan 1.11	Call
Softview Mac In Use	39

Modems

Hayes Smartmodem 1200	359
includes Smartcom II and cable	
Migent Migent MAC Modem	165

Desktop Publisher

Aldus Pagemaker	399
Letraset Ready Set Go 4.0	279
Microsoft Power Point	Call
Orange Micro Ragtime	216

Accessories

Curtis Ruby SPF-2	59
Kensington A-B Box	59
Appletalk Clips	10
Appletalk Cable Clips	18
Appletalk Connectors	18
Disk Case	22
Polarizing Filters	35
Tilt/Swivel (platinum or beige)	27
Softstyle Mac Enhancer	169

Upgrades

AST Research MAC86 MS DOS	
co-processor for MAC SE	439
MAC286 MS DOS	
co-processor for MAC II	1079
both cards require an external	
5-1/4" PC drive	
Dove MacSnap 548	425
MacSnap 548S	475
MacSnap Plus 2	305
MacSnap Toolkit	16
MacSnap 2S	507
MacSnap 4S	1009
MacSnap 524	182
MacSnap 524E	162
MacSnap 524S	229
General Computer Corp.	
Hypercharger 020	719
no ram or 68881	
Hypercharger 020 no 68881	929
Hypercharger 020 w/68881	1219

Educational

Davidson Math Blaster	28
First Byte First Letters	
& Words	32
First Shapes	32
Kid Talk	32
Math Talk	32
Speller Bee	32
Mindscape	
New Improved Mastertype	32
Perfect Score SAT	45
Simon & Schuster	
Typing Tutor IV	39
Springboard	
Early Games	30
Easy As ABC	30

Integrated

Microsoft Excel 1.04	Call
Works 1.0	Call

Languages

Borland Turbo Pascal	65
Microsoft Basic Compiler 1.0	Call
Basic Interpreter 3.0	Call
Fortran Compiler 2.2	Call
Think Technologies	
Lightspeed C	99
Lightspeed Pascal	72

Disk Drives/ Hard Drives

AST Research AST 2000	1429
20MB SCSI/20MB tape backup	
AST 4000	3379
74MB SCSI/60MB tape backup	

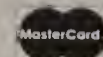
Servicing our PC buyers with low pricing and technical experience since 1979.

- Shipping on most software is \$5.00
- AZ orders add 6.7% sales tax.
- We accept Purchase Orders from authorized institutions for 3.5% more than cash price.

- Personal check/company allow 14 days to clear.
- All returns are subject to our approval.
- Sorry, no refunds on open software, due to copyright laws.

- There will be a 20% restock fee on all returns.
- All Prices are subject to change.
- Sorry, no COD orders.

No Charge for MasterCard or Visa



The Macworld Catalog

Now *Macworld* connects you with the world of Macintosh products instantly. And cost-effectively.

The Macworld Catalog is your immediate access to hundreds of Macintosh products, manufacturers, and services. Each month, this special direct response section brings you detailed product information arranged by category—so you can quickly compare prices and capabilities. Then pick up the phone and order!

For the best Macintosh buys, scroll through *The Macworld Catalog*.

The Macworld Catalog

Accessories

Hardware255
Supplies255

Hardware

Bar Code255
Computer Systems . . .255
Disk Compatibility . . .256
Emulators256
Memory Upgrade . . .256
Miscellaneous256
Monitors257
Networking257
Peripherals257

Hypercard Stacks

257

Services

Computer Insurance . . .257
Consulting257
Data Conversion258
Desktop Publishing . . .258
Disk Duplication258
Laser Recharge258

Software

Accounting259
Artificial Intelligence . .259
Business259
Business Mgmt.259
Clip Art260
Communications260
Data Acquisition260
Database Mgmt.260
Desktop Engineering . .260
Desktop Publishing . . .261
Educational261
Engineering261
Entertainment262

Financial262
Fonts262
Genealogy263
Graphics263
Imports263
Investment264
Languages264
Mail Order264
Mathematics264
Medical264
Music/Midi264
Office Mgmt.265
Payroll265
Plotter Drivers265
Printer Drivers265

Programming Tools . . .265
Project Management . . .265
Public Domain265
Real Estate266
Rental266
Retail266
Sales/Marketing266
Scientific266
Security267
Statistics267
Utilities267
Vertical Applications . .267
Word Processors267

Miscellaneous

Mailing Lists267
Publications267
Video Instruction267

Categories are subject to change

Advertising Rates & Information *The Macworld Catalog*

The Macworld Catalog section is a monthly link-up for advertisers and volume purchasers of Macintosh-related products and services. The *Catalog* offers advertisers a low-cost marketing opportunity and provides readers with a timely, easy-to-use menu for product buying.

Display ads are sold by column inches (2" minimum). Standard red is available as a second color. Text-only listings are available for a minimum of three issues at \$322 per issue (\$965 total).

For more information, space closings, and material deadlines, please call toll-free 800/888-8622.

**Instant Link:
Macintosh
Products,
Manufacturers,
Services**

**The Macworld
Catalog**
501 Second Street
San Francisco,
CA 94107
800/888-8622

Account Managers
Niki Stranz,
Western U.S.
Carol Felde,
Eastern U.S.

The Biggest Small Investment You Can Make.

Take advantage of the direct link with your buyers that maximizes exposure at a low cost.

The Macworld Catalog reflects the expanding corporate Macintosh audience whose purchasing activities increasingly include mail order. The cost-effective direct response advertising available monthly in *The Macworld Catalog* links you instantly with nearly 500,000 qualified buyers.

Get into the link. Call 800.888.8622 and place your ad now!

800.888.8622



The Macworld Catalog

Accessories Hardware

Keypad/Trackball

The Numeric Ease: Upgrade your 512K/128K w/a 22 station, full scale, full function numeric keypad. Includes cursor keys & direct function keys, such as +, -, ×, ÷, & =. List: \$59. The Numeric Turbo: A track ball cursor-controller combined w/Numeric Ease. List: \$129. Dealer inquiries welcome.

Cambridge Automation, Inc., 20230 State Rd., Cerritos, CA 90701. Orders/Info: 800/345-8666 or 800/826-9214 in CA.

MacChimney™

A silent, inexpensive, and effective cooling device. Increases airflow by 60% without moving parts. It is constructed of a durable laminated-cardboard and is attractively printed. Installation is easy and satisfaction is guaranteed. Not for the SE, II. \$17.95 includes shipping, tax. *Silicon Comforts, 2560 Bancroft Way #117, Berkeley, CA 94704, 415/658-9543*

Call Up
Your Ad
On Our
Screen.

The Macworld Catalog

800.888.8622

Supplies

Company Logo Specialist

Grey, Green & Red Pads
Size: 9 1/4" × 8" × 3/8"

- 12 pads \$9.50 w/logo
- 72 pads \$7.90 w/logo
- 144 pads \$6.70 w/logo
- 500 pads \$6.30 w/logo
- 1000 pads \$6.10 w/logo

ENTIRE pad imprintable.

GUARANTEED to last. MULTI-COLOR jobs OK. SAMPLES w/logo \$12.50.

Computer Expressions, 3833 Chestnut Street, Philadelphia, PA 19104, 800/443-8278

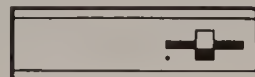
Cordura Bag for Mac SE

- Organize Mac components for easy access, w/padded interior compartments.
- Tough Cordura® & resilient foam padding for protection.
- Quality material & carefully crafted construction—guaranteed.
- Ask about our ImageWriter II case.
- Call your local dealer today! For the dealer nearest you, call us or write. Dealer inquiries invited. *West Ridge Designs, 305 N.W. 12th Ave., Portland, OR 97209, 503/248-0053*

LASEREDGE® Paper/Film

Get high resolution from plain paper laser printers and color plotters. LASEREDGE® high resolution Papers/Films are waxable for paste-up. The bright white background, denser image, and finer edge of line will allow enhanced capability for 300 dpi to reproduce on camera. Call or write for samples today. MC/VISA accepted.

CG Graphic Art Supply, Inc., 481 Washington St., NY 10013, 800/342-5858



Mac Lock/Mac Cables

Mac Lock, finest security kit for Mac +, Mac SE, Mac II, secures Mac, keyboard, mouse, 2nd drive, modem, & printer. Attractive red vinyl-covered steel 3/16" cables. Lock included. No tools req. \$-back guarantee. Also, all IBM, Apple \$49.95. Mac Cables provide any length custom cables for Mac/+ (incl. keyboard) or almost any computer need. \$20 & up.

Mac Products, 20231 San Gabriel Valley Dr., Walnut, CA 91789, 714/595-4838

ImageWriter I/II Ribbons

COLOR YOUR APPLE WORLD!
SAVE \$\$\$\$\$\$

- Black Ink: \$2.65 Color Ink: \$4.00
 - Imagewriter II 4-Color Ink: \$9.50.
- S/H \$3 per order. Min. order Blk/Color: 3; 4-color: 2. Over 200 different ribbons available. Fully guaranteed/Quality products. "NEVER A REASON TO PAY MORE"

Silicon Output Supplies, 41-11 149th St., Flushing, NY 11355. Order Hotline: 800/451-0890. NY/ Customer Service: 718/358-7671



FUJITSU/SONY 3 1/2" DS/DD '1.0 ea.

DATASAFE 5 1/4 DS DD
W/TYVEK .39¢

OUR FULL LINE OF SUPPLIES
& PRODUCTS INCLUDE:

- Mousepads • Covers
- Modems • Head Cleaners
- Plastic & Teakwood Disk Boxes
- Hard Drives
- Public Domain Software

Comp-U-Save

414 Maple Ave., Westbury, NY 11590

(516) 997-6707

800-356-9997

CIRCLE 621 ON READER SERVICE CARD

Hardware Bar Code

BAR CODE & MAGNETIC STRIPE READERS FOR MACINTOSH PLUS, SE & II

Connects on keyboard or ADB
Requires no additional program or port
Does not affect keyboard or mouse
Industrial quality, heavy-duty units
Also available

Magnetic encoder
Code 39 Bar Code Printing Program
Portable Bar Code Reader

TPS Electronics

4047 Transport Street

Palo Alto, CA 94303

415-856-6833

Telex: (Graphnet) 371 9097

FAX: 415-856-3843

CIRCLE 613 ON READER SERVICE CARD

Computer Systems

Mac One-Stop Service

We specialize in bundling hardware and software for desktop publishing, LAN, database management & for small business accounting applications. Authorized dealer for Odesta, Dayna, Centram & Mega Graphics. Call for free price list & appointment. Best service & competitive pricing.

Pacific Prime Computer Products, 2612 Artesia Blvd. #B, Redondo Beach, CA 90278, 213/376-5820, FAX 213/542-2068

Your Mac Source

For all your Macintosh needs



(404) 843-2267 • (800) 367-7552
5600 Roswell Rd, Prado North Ste.
264 • Atlanta, GA 30342

CIRCLE 639 ON READER SERVICE CARD

The Macworld Catalog

Disk Compatibility

Use Mac Disks on IBM PC

MatchMaker lets you plug any Macintosh external floppy drive into an IBM PC. Half-size card and software lets you copy to/from, view directory, initialize, or delete files on the Mac disk. Works with PCs, XTs, ATs & compatibles. The easy way to move info! \$149. VISA/MC/COD/Checks.

Micro Solutions Computer Products, 132 W. Lincoln Hwy., DeKalb, IL 60115, 815/756-3411

RAM/ROM Upgrades

128K to 512Ke 512K to Plus
128K to Plus SCSI Port

Apple ROM/800K Drive.

Free Internal Fan Used Macs:

- 512K \$799
- 512Ke \$999
- MacPlus \$1325

Seikosha Printers \$269, Ehman 800K External Drives \$189, Internal Macintosh® Fans \$45.

Simmons Consulting (Disk Luggage), 5526 Pemberton St., Philadelphia, PA 19143, 215/471-9242 (until 10 pm)

Miscellaneous



MACsimize your Lisa/Mac XL

- 800k Int'l Disk Drive
- 20Mb Hard Disks
- AutoLoad HFS
- RAM Upgrades



Orders & Info 800-323-1751

Toll Free Product Hotline

800-782-7823

Dafax-14 North Dr., Malba NY 11357

CIRCLE 616 ON READER SERVICE CARD

Emulators

II in a Mac

An Apple //e computer
...all in software!

Run Apple II software on your Macintosh.

Convert Apple II files to Macintosh files.

\$149.95 Add \$3 for P&H

COMPUTER:applications, Inc.
12813 Lindley Drive Raleigh, NC 27614
(919) 846-1411

CIRCLE 640 ON READER SERVICE CARD

Do you need MORE MEMORY

for your Mac Plus, SE, or II ?
PSI has the one megabyte SIMMS that are necessary to upgrade your Macintosh's RAM to the maximum.

Only \$249.00 each

Call today for fast delivery.

800-MAC-1PAC

408-942-8188 in CA

PSI 1609A S. Main • Milpitas, CA 95035

Price subject to change

Visa/MC

CIRCLE 617 ON READER SERVICE CARD

Mac-cessory™

EVEREX Hard Drives

20 MB \$498 EMAC-20D Hard Drive

EMAC-60T Tape Backup \$836

EMAC-40D Hard Drive \$958

EMAC-91D → Only \$1389

18 Milliseconds access time

Toll Free **800-634-1497**

MC **216-543-1952** Visa

Valley Computers

16744 W Park Circle

Chagrin Falls, OH 44022

CIRCLE 619 ON READER SERVICE CARD

Microsoft MacEnhancer

Add one parallel and two serial ports to your Mac w/o losing any of the existing ports. Also enables the use of many popular dot matrix and letter quality printers as well as the HP LaserJet. Regularly \$199. New in factory box for just \$99 + \$8 s/h. Offer ends 3/20/88.

Preowned Electronics, Inc., 30 Clematis Ave., Weltham, MA 02154, 617/891-6851

Memory Upgrade

Memory Enhancements

Upgrade your Mac to 512K, 1024K, or 2048K of contiguous memory. SCSI port & fans available. Factory flow-solder techniques used for high reliability. 120-day warranty. Local 20-minute installation or mail order. Dealer inquiries welcome. Call for pricing and information. *Ehman Engineering*, 115 Apache Dr., Evanston, WY 82930, 800/257-1666

ACCU-SIMMS/1MB

Upgrade your Mac Plus, SE, or Mac II by 2- to 4MB for \$280 per meg with ACCUSIMMS, newest state-of-the-art CMOS surface-mount DRAMS, with lifetime guarantee. Assembled & tested in the USA. Quantity prices available. Free \$25 amber filter with each order. Fits all Macintoshes.

Data Memory Systems, Box 785, Middleton, MA 01949. Orders only 800/634-5463 ext. 320, Customer Service 617/683-2325

1 Meg SIMMS Available NOW!

Get off the waiting list and start computing! Video Installation Guide available so anyone can do it.



COMPUTER CARE
210 Second Street North, Suite 301
Minneapolis, Minnesota 55401
(612) 375-9238

CIRCLE 622 ON READER SERVICE CARD

**Call Up
Your Ad
On Our
Screen.**

The Macworld Catalog.

800.888.8622



The Macworld Catalog

Monitors

MacLarger Video Monitor

12" Monitor shows same 512 × 342 image, 70% more area. Video board installs in minutes without cutting, drilling or soldering. Runs 1 to 6 monitors in parallel. Ideal for classrooms.

12" Monitor alone	\$349
Video Board alone	\$129
Both	\$449

(specify Mac 512, Plus or SE)

Power R, 1606 Dexter North,
Seattle, WA 98109, 206/547-8000

Networking

PhoneNET® System

The PhoneNET System creates an AppleTalk network w/convenience, added distance, & flexibility of telephone wire. PhoneNET supports AppleTalk & can use standard telephone cabling, even existing wiring. Components incl: PhoneNET PLUS Connectors, PhoneNET Star-Controller w/StarCommand DA & PhoneNET Manager software, TrafficWatch network analysis package & PhoneNET CheckNET DA.

Farallon Computing,
2150 Kittredge St., Berkeley,
CA 94704, 415/849-2331

Ethernet for the Mac

Kinetics provides Ethernet hardware & software for all Macintosh® computers. Products include:

- FastPath: AppleTalk Ethernet gateway
- EtherSC: SCSI-Ethernet controller
- EtherPort SE: Internal Ethernet card for the Mac SE.
- EtherPort II: Internal Ethernet card for Mac II. AppleTalk, TCP/IP & DECnet supported.

Kinetics, Inc. 2500 Camino
Diablo, Walnut Creek, CA 94596
415/947-0998



CompuNet Connector

LOW COST - HIGH QUALITY

Apple-Talk PhoneNet™ compatible network connector. Uses standard telephone wire. No special hardware required for 3000' Apple-Talk networks. \$29.95 retail. SCSI Cables 25-50 & 50-5- UL. \$24.95 retail. Dealer inquiries welcome.

Trimar USA Inc., 236 W. 15th St.,
New York, NY 10011,
800/872-4454, 212/645-7008

Peripherals

MacRecorder™

MacRecorder records *real* sound into your Mac. Simple to use. Just hold it in your hand & speak into built-in microphone, or record directly from your TV or stereo. Pkg. incl: *HyperSound™* stackware lets you record & work w/sound from within HyperCard. *SoundEdit™* software records sound, then lets you edit & save files in a variety of formats including *HyperCard*, *StudioSession™*, *VideoWorks™*, & *Beep INITS*.

Farallon Computing,
2150 Kittredge St., Berkeley, CA
94704, 415/849-2331

Hypercard Stacks

Typeface Book and Stack

Virtually every PostScript font (all vendors), beautifully displayed & documented. For each type family, stack shows all styles, alphabets, character sets. Book adds sample usages & more. History & mood, usage hints, tech data & vendor/ pricing info! *The Typefaces of DT Publishing* • 800-HyperCard stack \$24.95

DT Publishing Type & Graphics

• 300+ page paperback \$29.95
Book & Stack Combo \$39.95
Publishing Resources Inc.,
Boulder, CO 303/442-1100,
orders 800/553-1666

MacRun—Runner's Log

Powerful tool for goal oriented runners. Rated #1 by leading running magazine. Records mileage, computes pace, shoe mileage, includes graphics, daily comments and weight. HyperCard™ version \$39.95. *Excel™* version which offers additional graphics, statistics, race time predictor & PR section is \$59.95. VISA/MC accepted.

Run Soft Products, 15930 NE
Siskiyou, Portland, OR 97230,
503/256-4806

Bible "King James"

Bible "King James" Version on HyperCard™. Beautiful screen design, chapters and verses called on screen instantly with the touch of a button. Search capabilities unequal to any concordance book. By copying, pasting and printing out, you can make your own topics designed for custom purposes in a fraction of the time. \$120, all charges included.

Alpha & Omega, P.O. Box 81056,
South Burnaby, B.C. Canada, V5H
4K2, 604/876-7423,
604/732-7171

Bed & Breakfast Inns!

Ever dreamed of staying at a Victorian mansion, Southern plantation, or Seaside resort? The informative and entertaining *InnServ* B & B *HyperGuide™* tells about hundreds of B & B and Country Inns nationwide—plus state maps. Toll free reservation line and free newsletter! \$15.95. Credit card phone orders accepted.

InnServ, Rt. 1 Box 47-A, Redkey, IN
47373, 317/369-2245

The Macworld Catalog.

800.888.8622

Services

Computer Insurance

SAFWARE

INSURES YOUR COMPUTER.

Safeware provides full replacement of hardware, media, and purchased software. As little at \$39 a year provides comprehensive coverage. No lists of equipment needed. One call does it all! Call 8 a.m. to 10 p.m. ET (Sat. 9 to 5). SAFWARE, The Insurance Agency Inc. 2922 N. High St., PO Box 02211, Columbus, OH 43202



800-848-3469

(Local - 614-262-0559)

CIRCLE 635 ON READER SERVICE CARD



Data Security Insurance offers two policies for computers, each with essential coverages not available elsewhere. As low as \$35/year.

DATA SECURITY INSURANCE

INSURE YOUR COMPUTER AGAINST ACCIDENTAL BREAKAGE

1-800-822-0901

CIRCLE 624 ON READER SERVICE CARD

Consulting

Mac Support

Tired of phone-tag? Do you wish you could get an answer now instead of "We'll have to call you back"? Call us! We are an experienced group of Mac professionals that can provide answers to your questions. Individual, corporate rates available. Call for more information. We are...

Adler Communications, 865 Rear
Islington St., Portsmouth, NH
03801, 603/436-2881

The Macworld Catalog

Data Conversion



Mainframes,
Minis,
Dedicated word processors,
Typesetters,
Desk-top publishing sys.,
Microcomputers.

Convert and translate features of DBMS, spreadsheet and word processing files stored on disks or tapes to or from your Macintosh!

CompuData Translators, Inc.
3325 Wilshire Blvd., Suite 1202
Los Angeles, CA 90010
800/825 8251 213/387 4477

CIRCLE 605 ON READER SERVICE CARD

Tape/Disk Conversions

Conversion services for your Macintosh, to or from over 1,000 computer systems:

- Mag tapes
- Microcomputers
- Word Processors
- Typesetters

Our conversion capabilities include to or from 3½-inch, 5¼-inch, and 8-inch disks & mag tapes.

Pivar Computing Services, Inc.,
165 Arlington Heights Rd., Dept
MC, Buffalo Grove, IL 60089,
312/459-6010

Desktop Publishing

MacTypeNet™

Mac/PC typesetting. Disk or modem. 300-dot LaserWriter™ output; 635-, 1270-, or 2540-line Linotype™ L300P output. Composition, page makeup, printing/bindery services. Hardware/software sales, services, and support; beginning and advanced training and seminars for Macintosh®, PC, and Linotype 100/300 users.

MacTypeNet,™ P.O. Box 52188,
Livonia, MI 48152-0188,
313/477-2733

Laser Printing Services

LaserWriter (300-dpi)/Linotype L100 (1270-dpi) output of your Mac/IBM files. Disk or modem. 24 hr. service. Linotype \$7 per page (\$3.50 volume discount). LaserWriter \$.50 per pg. Desktop publishing specialists in consulting & design services. Hardware/software sales. Offset printing & bindery services available. Rent IBM/Mac \$5 hr. Adobe font dealer. Check our low price.

Laser Printing Services, 26058 W.
12-Mile Rd., Southfield, MI 48034,
313/356-1004 (MI),
800/722-3475 (Nat'l.)
Modem: 313/356-3186

Type/Imagesetting

Island Color Productions has so many advantages:

- High-resolution typesetting
- Linotronic imagesetting
- Laser printing
- Computer graphics & design
- Speedy turnaround time
- From MAC, IBM or any ASCII file
- Whether keyboard, disk, or modem

Why not take advantage of us?
Island Color Productions, 11
Stony Brook Ave., Stony Brook,
NY 11790, 516/751-0485 (voice),
516/751-0430 (24-br. modem on
line)

PostScript Printout

First Directory of high-quality PostScript printout services. Over 350 detailed listings of services that output MAC & other files at resolutions over 1000dpi. Check or money order for \$10. No phone orders please.

TypeWorld, Box 170, Salem, NH
03079, 603/898-2822

The Macworld Catalog

800.888.8622

Waldman graphics Printers + Typographers

NYC / NJ / Phila DESIGNERS

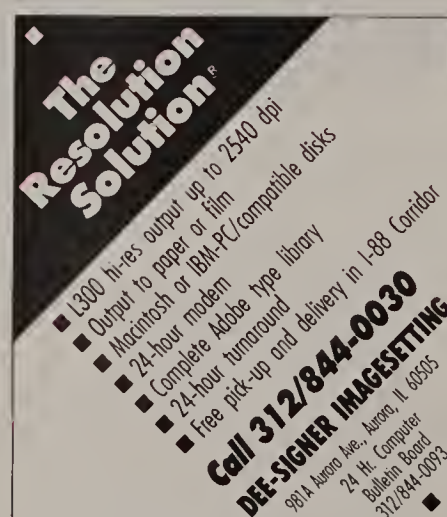
We help top-notch designers achieve high resolution type & graphics using desktop tools. Keep your standards while lowering your costs. Original electronic art and PostScript special effects our specialty.
• 1270 & 2540 dpi pages from Linotype L300s
• Repro, Pos. & Neg. film • Disk or modem • Color separations • Scitex system • Award-winning prepress, printing, binding & mailing
• 18 messengers! • Adobe dealer
We are the most knowledgeable people you will talk to. Call Mary Ann Ostberg for more information about our superb services.
212 925-2420 / 201 522-8778 / 215 627-7200 / 609 662-9111

CIRCLE 637 ON READER SERVICE CARD

West Coast Connection!

Upload by disk or 24-hr. modem for 2540-line L300 output, with up to 30 font calls per page. Support all Adobe fonts, Mac & PC software including Ventura, Pagemaker, and most PC word processors. 24-hr. turnaround. Adobe type dealer; beginning and advanced training for Mac, L300 and PC users. Convention service.

Lazer Graphix, 3250 B. Pollux
Ave., Las Vegas, NV 89102, (Voice)
702/871-5511, (FAX)
702/876-1092. 24-br. modem on
line)



CIRCLE 625 ON READER SERVICE CARD

Disk Duplication

3.5" As Low as \$1.25/ea.

Software duplication also for 3.5" 2 MB, 5.25", & ¼" cartridge tape. Authorized Distributor for Trace/Ghostwriter Disk Duplication Equipment. Quality, Performance and Value. Your one source for complete SOFTWARE PACKAGING, Custom Printed labels, binders, manuals.

West Coast Telecom, 10300 S.W.
Nimbus #A, Portland, OR 97223,
503/620-1888



CIRCLE 626 ON READER SERVICE CARD

Laser Recharge

SELL US YOUR EMPTY TONER CARTRIDGES \$10

- \$6.50/cartridge • \$3/used fixer cleaner • \$50/box+styro
- PRINTERS: HP series I&II, Apple, Canon QMS, NCR...
- COPIERS: Canon PC models 10, 14, 20 and 25
- You pay shipping for empties. Ship in orig. box & styro

BUY OUR REFILLED CARTRIDGES

- BLACK \$40 (\$50 w/o) BLUE/BROWN \$60 (\$70 w/o)
- We pay shipping • Over 20% more toner than new.
- Quality Control sheet and felt cleaner included.
- first nationwide cartridge refiller. PCWEEK 12/16/86 p16
- MICHLIN COMPUTER CONSULTANTS INC
- LASER CARTRIDGE DIVISION
- 3770 Plaza Drive Suite 1
- Ann Arbor, Michigan 48108-7354
- VISA/MC/P.O. welcome
- 313-663-9800 TELEX 98-1520
- 800-63-TONER FAX: 3136639862
- Ad is photo of recharged cartridge printout

CIRCLE 607 ON READER SERVICE CARD

The Macworld Catalog

reconditioned **TONER** cartridges!
for laser printers & Canon PC Copiers

BETTER THAN NEW!

- 20% MORE TONER
- DARKER PRINT
- 100% GUARANTEED

\$44.95

We buy empties-\$10
call for brochure
800-426-8196

Willow Products Corp.
3857 Willow Ave, Pgh, PA 15234



CIRCLE 638 ON READER SERVICE CARD

Recharge Dealerships!!

Hot New Field! Recycle laser printer & copier toner cartridges. Join our network & make money now. Train at our location or at home. High profit, low overhead. Established company. Learn it right—no drill & fill! Factory-like recharge method. Receive tools, supplies, trade secrets, marketing strategy & technical support. Free call for information.

*Laser Charge Co., 11782 Jollyville Rd., Austin, TX 78759,
800/223-8134 or call collect
512/335-8191*



National Laser Recharge

Save your money! Let us recharge your Laser printer toner cartridges for Hewlett Packard LaserJets, Canon, Apple LaserWriter, Corona, QMS, & many others with our 100% Guaranteed Factory-like recharge method. No drill & fill! Long Life method for only \$49 incl. s/h. Up to 30-50% more printing & up to seven charges per cartridge. Send cartridges along with check or MO to:

National Laser Recharge, 1413 Loop 281 W. #101, Longview, TX 75604, 214/297-0200

Software Accounting

BAKERForms®

Accounting applications for *Micro-soft Works®*. Prints checks, invoices & POs on pre-printed forms. 15 reports give you necessary totals to post to your general ledger. Accounts Receivable, Accounts Payable, Payroll, & Purchasing at \$49.95 ea. All 4 at \$169.

*Baker Graphics, P.O. Box G 826/ Dept. B, New Bedford, MA 02742,
617/996-6732, 800/338-1753*

Artificial Intelligence

Instant Expert™

A simple and powerful *Expert System Shell* designed to be the easiest to use. The powerful inference engine provides an easy-to-use expert system application query. Forward and backward chaining as well as a unique mixed strategy gives real flexibility to users. The system can explain *how* and *why* a conclusion was reached and give the user special *Solution* information. \$49.95.

Human Intellect Systems, 1670 S. Amphlett Blvd., San Mateo, CA 94402, 415/571-5939

Business

Excel Toolkits for Business Planning

Practical worksheets, charts, macros, and complete application guide

- Business Plan: \$69.95
- Financial Forecasting and Planning: \$49.95
- Sales and Market Forecasting: \$49.95

Infoplan

155 Forest, Palo Alto, CA 94301

(800) 336-5544

CA (415) 325-3190

CIRCLE 628 ON READER SERVICE CARD

Business Plan on diskette

MacBizPlan™

Over 70 pages of outlines, headlines, started sentences & paragraphs, lists, suggestions...

180K already typed into MacWrite — lots of good copy that can be edited into a comprehensive plan for business management.

A tremendous head-start for entrepreneurs, marketers, consultants & executives.

from **Tools For Sales™**

\$79⁰⁰ (415) 941-9191

CIRCLE 636 ON READER SERVICE CARD

Business Mgmt.

Restaurant Management

Total control for any size restaurant. System includes: inventory control, menu management, help screens, documentation, hotline support, \$995. Accounts payable, accounts receivable, restaurant payroll, and general ledger. \$175 ea. VISA/MC. Demo \$35. Req. MacPlus & Omnis3. Dealers invited. Money-back guarantee.

*Keller Systems Inc., 105 Narcissus St. #310, West Palm Beach, FL 33401, 305/833-3358,
800/458-8430*

All New! Timeminder™ 1.7

Auto time tracking program and D/A. TimeMinder offers time and project billing, auto project tracking & employee productivity reporting. Includes: Invoice printing, Client receivable ledgers, 2-pg. work notes, Manual Entry, PauseTime D/A, Variable Project Search & Auto Warning of projects coming due. Unlimited number of client or employee files. And more! \$299.

*Aatrix Software™, P.O. Box 5359, Grand Forks, ND 58206-5359,
Order line: 800/426-0854*

MacEnvelope™

Print envelopes with LaserWriter® or ImageWriter® quickly and easily. No more positioning headaches! Save addresses and layouts. Use any fonts in your system. Use styles to add spice and sophistication to your envelope printing. Not copy-protected. 512K or larger. \$29.95 + \$3 s/h. VISA/MC/Chk.

*SYNEX/MacEnvelope™, 692 Tenth St., Brooklyn, NY 11215,
718/499-6293*





The Macworld Catalog

Advertising Agencies

Client & Profits™ is a complete job planning, costing, and billing system designed by advertising professionals for advertising agencies. Features estimates, scheduling, client tracking, time sheets, payables, receivables, and more. Multi-user. Customizable too! Satisfaction Guaranteed.

Working Computer, P.O. Box 86602, San Diego, CA 92138, 619/721-0501

Clip Art

MAC-ART LIBRARY

Illustrate your ideas w/MAC-ART LIBRARY! 12 disks of professional MacPaint images:

- Animals
- Flowers/Trees/Plants
- Farm Life
- Greeting Cards
- Geography
- People
- Kitchen
- Transportation
- Sports
- Signs/Symbols/Borders
- Tools
- Buildings

Sgl. disks \$39.95. Full library \$250. Sampler \$49.95. \$3/s/h. Other disks CompuCRAFT, P.O. Box 3155, Englewood, CO 80155, 303/791-2077

Interesting Graphics

Our skilled illustrator has produced 5 collections for your Mac: *Horror/Fantasy #1*, *Bytes of Fright*, *Dinosaur Bytes* (natural history), *Sky Bytes* (aerospace), and *Classic Sci Fi*. The collections contain a variety of images, each of which is carefully crafted. Each collection is \$29.95 (\$32.05 in CA).

AAH Computer Graphics Productions, Box 4508, Santa Clara, CA 95054, 408/980-7363

ARTWARE Graphic Library

Detailed commercial & presentation graphics created with Adobe Illustrator. Use with programs that import Encap. Postscript files. Pictorial index included. Use as is, or modify with Illustrator, \$69.95 per disk. By subscription \$49.95 per disk. Disk of the month club.

Artware Systems Inc., 3741 Benson Dr., Raleigh, NC 27609, 919/872-6511, 800/426-3858

Communications

Session™ HP CRT Emulator

The Session™ family of IIP terminal emulators lets your Mac talk to the HP3000, 9000, and 1000. Business Session (formerly Mac 2624; \$199) emulates an HP 2392 block mode CRT. Graphic Session (\$299) adds HP 2393 graphics. Color Session (\$399) emulates the HP 2397. File transfer included.

Tymlabs Corporation, 811 Barton Springs Rd., Austin, TX 78704, 512/478-0611, Telex 755820

PacerLink (was pcLINK)

Connects Macs to VAX (VMS and ULTRIX), Stratus and UNIX systems. Supports serial line, remote modem, direct Ethernet, and AppleTalk bridged to Ethernet communications media. Provides terminal emulation (VT220, VT100, VT240/241), file transfer, virtual disk, and print services. PacerShare enables the VAX/VMS system to act as an AppleShare compatible file server.

Pacer Software, Inc., 7911 Herschel Ave. #402, La Jolla, CA 92037, 619/454-0565

Burroughs emulation

Contact™ emulates TD/MT/ET terminals. Sophisticated data capture—all screen data can be used by spreadsheet, database, word processor... CANDE & XMODEM file transfer. Fully à la Mac interface. Soft keys, multiple pages & addresses, password protection... Soon: full file-transfer capabilities, Sperry terminal emulation. Avenue Software, Inc., 1173 W. Charest Blvd., Quebec, QC, Canada G1N 2C9, 418/682-3088



Mactell 4.0

Superior int'l. communications software for all Macs features:

- Minitel mode for access to more than 6,000 online services world-wide
 - ASCII compatibility for standard US services
 - Sophisticated macro language
 - Multi-protocols: Macterminal, MacBinary, X & Y Modems
 - Unique File Server: set up your own Bulletin Board
 - And much more! \$97.
- Quantity pricing avail. Order today! Baseline, 838 Broadway, New York, NY 10003, 212/254-8235, 800/CHAPLIN

TextTerm+Graphics

New, MultiFinder version supports background file transfers, fast DEC VT100 and Tektronix (4014, 4105) terminal emulation. Reverse scrolling, local editor, large screens & color. \$195

Mesa Graphics
P.O. Box 600
Los Alamos, NM 87544
(505) 672-1998

CIRCLE 632 ON READER SERVICE CARD

Data Acquisition

MacPacq

The MacPacq transforms the Macintosh into a digital oscilloscope, chart recorder & waveform generator. A complete data acquisition & control system. 8 channel A/D, 8 digital I/O, programmable gain, 64K RAM. Optically isolated, line or nicad powered. Runs remote and/or connected to Mac. Comprehensive software interface provides for powerful & flexible system. \$995 complete.

Biopac Systems, 42 Aero Camino #215, Goleta, CA 93117, 805/968-8880

Database Mgmt.

Instant Data Access

QuickDEX, a free-form database Desk Accessory with autodialer and printing utility. "QuickDEX is the quickest & easiest solution we have found for storing & retrieving simple information."—MacWeek. "The speed is truly amazing."—L.A. Times. "I use it all the time."—Steve Brecher/Publisher of Suitcase. Greene, Inc., 15 Via Chualar, Monterey, CA 93940, 408/375-0910
Orders: 800/331-4321, 800/851-1986 (CA)

Desktop Engineering

Parameter Manager Plus™

Designed for people who need to manage, analyze & graph time, date, or sample-based data. No macros or templates are needed to produce trend plots, strip charts, histograms, forecasts, parametric plots, statistics, correlation, and financial high-low charts. Plot up to 32,000 data points, 96" x 48" in size. Text import & "Calculated Parameters" \$395. Complete Demo \$10. MC/VISA.

Rebus Development Corp., 651 River Oaks Parkway, San Jose, CA 95134, 408/263-2207. Orders: 800/654-5147, 800/247-4994- (CA)

Call Up Your Ad On Our Screen.

The Macworld Catalog

800.888.8622



The Macworld Catalog

Desktop Publishing

MacPalette

By Microspot prints multicolored graphics & text from most Macintosh® software using the Image-Writer II. MacPalette will colorprint documents from *MacDraw*, *MacDraft*, *MiniCad*, *MacProject*, *MacWrite*, *JAZZ*, *Microsoft Chart*, *Word*, *Excel* etc. (not *MacPaint*.) It prints black as a true black instead of mixing a black. \$69. *CompServCo*, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

MicroSetter® II

This QuickDraw driver resides in the Macintosh allowing Compu-graphic, Varityper, CRTronic type-setters to be driven directly from the Macintosh. Output from Page-Maker, XPress, RSG, MacDraw, Word and others. Retains all formatting including graphics, without need for coding. \$1490 - \$3500. Demo \$50. *TeleTypesetting Company*, 474 Commonwealth Ave., Boston, MA 02215, 617/266-6637, FAX 617/266-3062

Educational

Gradebook/Test Generator

MICROGRADE—flexible course & grading, 400 students/100 assignments per class, prints stats & various reports. Ideal for any grade level. MICROTTEST II—create, update, generate, & store exam materials. Easy question entry, large database, multiple test versions. Demo \$5. FREE EDUCATIONAL CATALOG. *Chariot Software Group*, 3659 India St. #MD1, San Diego, CA 92103, 619/298-0202

Brainchild Grade™

Unique graphic interface, like paper grade book, extremely easy to use. Total integration of spreadsheet, database, & report-generating software. Free-form class structure, enormous capacity, & speed! Complete stats & graph program. Intricately detailed user's manual. Value-priced at \$25. No other program comes close! *Brainchild Corp.*, avail. through the *Kinko's Academic Courseware Exchange*. To order, call 800/235-6919, 800/292-6640 (in CA)

Test Generation & Scoring

Combining graphics, word processing, database management, and automatic scoring, LXR•TEST enables you to produce, score, and analyze tests easier and better than ever—GUARANTEED! Reviewers say: "best testing tool!", "teachers' dream come true", "95 Rating", "fills every testing need", and more! *Logic eXtention Resources*, 9651-C Business Center Dr., Rancho Cucamonga, CA 91730-4537, 714/980-0046, AppleLink: DO626

MacKids™

The Learning Edge

Alphabetizer	Lemonade Stand
Naval Battle	ClockWorks
BodyWorks	WordSearch
CoinWorks	FlashWorks
Preschool 1	Preschool 2
Early Elementary 1	EarthWorks

Each title \$39.95 MC/VISA/Chk. Write or call for a free catalog. *Nordic Software, Inc.* 3939 North 48th St., Lincoln, NE 68504, 800/228-0417, 402/466-6502

MacANATOMY

A complete electronic atlas of human anatomy in *MacPaint* document form. The drawings may be modified and merged into *MacWrite* documents using the Clipboard. Comprised of four volumes, available singly or as a collection. *MacMedic Publications, Inc.*, 5805 Westheimer, Houston, TX 77057, 713/977-2655

Kieran

Integrated learning program for children 2-6 yrs. Uses child's name in speech and pictures. Totally mouse driven interactive program with iconic interface. Covers alphabet training, time telling, counting skills, upper-lower case, and mystery door! 4-mice rating in *MacUser*. Great gift! MC/VISA \$39.95. *Ohm Software*, 163 Richard Dr., Tiverton, RI 02878, 401/253-9354, 800/346-9034

Flash & Match

ELECTRONIC FLASH CARDS

- Any topic • With graphics
- Record keeping ★

VISA / MC \$29.95 ★

French, Spanish, or German
1,500 word vocabs \$14.95 ea.

(415) 626-9986 ★ (800) 622-9986

Inventure, Inc.
555 De Haro St., San Francisco, CA 94107

CIRCLE 641 ON READER SERVICE CARD

CONJUGATE! Spanish™

Helps you learn the essential, yet difficult part of Spanish... *verb forms* • Customize and save drills • Immediate feedback on errors • Identifies 200,000+ verb forms • Analyzes weak areas. The ultimate drill-creation tool for students and teachers: \$54.95. Demo \$5. School site licenses available. *Macademia Software, Inc.* 2503 Essex Place, Nashville, TN 37212, 615/383-2413

Algebra Homework Tutor

Revolutionary Homework Tutor™ lets you do your Algebra homework or classwork on a Mac. Checks each step you enter, gives hints, poses practice problems, solves and explains examples, and prints completed homework. Easy editing, standard Mac interface and too much more to tell. Send for free brochure. *Missing Link Software*, Box 3280, South Amboy, NJ 08879, 201/721-2569

MacTAG- \$65.00

- Teacher's Assistant Grader •
- 1000 students • 200 Columns •
- Easy to use • Eliminate lowest scores & excused absences • Calculate • Sort • Rank •
- Print histograms & reports •
- Assign random ID# & weights •
- Various Grading Options •

Paragon Concepts Inc.

4954 Sun Valley Rd., Del Mar, CA 92014 (619) 481-1477

CIRCLE 609 ON READER SERVICE CARD

Engineering

Schematic Entry/Digital Simulation

DesignWorks™

Fully integrated and fully functional schematic and simulation on the Macintosh, featuring:

- fully interactive digital simulation with logic-analyzer style timing display
- fully compatible with Douglas CAD/CAM™ PCB layout
- full 7400, 4000, LSI, analog libraries
- full high level language PLD support when used with LPLC logic compiler
- dot-matrix, laser, pen plotter output
- user-definable device symbols with full simulation

DesignWorks: \$685 LPLC: \$535

Low-cost educational versions also available

Capilano Computing
545-108th NE, Suite 6
Bellevue WA 98004
(604) 669-6343

CIRCLE 602 ON READER SERVICE CARD

Civil & Structural

Fully integrated analysis programs for 2-D frames, trusses, beams: FRAME MAC, BEAM MAC, BEAM MAC II. Structure, moment, defl. diagrams, text & more. \$145-\$595. Demo available. New: MacCOGO for geometric & structural properties of shapes: \$145. COGO MAC available 1/88 (traditional COGO). \$-back guarantee. *Compuneering, Inc.*, 113 McCabe Crescent, Thornhill, Ontario L4J 2S6, Canada, 416/738-4601



The Macworld Catalog

BEVERLY HILLS 1.5

Acclaimed "the best ImageWriter™ font on the market"! Professional, "typeset" appearance. Makes better photocopies, 11 sizes (6-12, 14, 18, 24 & 36 pt), leading/spacing in 2-/1-pixel steps, variable length horizontal lines, 72 fractions from 1/2 thru %, additional math symbols, 2 on-disk manuals. Save cost of expensive printer for \$15 US (\$15.98 in CA) plus blank disk! ADH Software, P.O. Box 67129, Los Angeles, CA 90067-0129

LaserPerfect™ Typography

Distinctive, downloadable fonts feature legibility, good fit, kerning, old-style numerals. *Foreign:* Hebrew, Athina (Ancient & Modern Greek), Devanagari. *Book & Display:* MacSlab (square serif), Ambo, other fine type. *New!* Phonetic, OCR-A, LCD, Diacritic, Fractions & Old Style. Download to Linotronic hard disk. \$55-\$125. Custom characters/fonts. Free samples. Neoscribe International, P.O. Box 633, East Haven, CT 06512, 203/467-9880

Genealogy

MacGene™ (version 2.8)

70% faster & 100% complete. Designed specifically for the Mac. One program for data entry, search, select, list & charting. Features: History, Hints, Mail-List, Family Tree, Statistics, Text, etc.
 • LDS compatible • Mac's & Mac-XL
 • Extensive Notes • User Fields
 • Custom Reports • Import/Export
 • No copy protect • 80-pg. manual
 • \$-back guarantee \$145. Demo \$25. Applied Ideas, Inc., P.O. Box 3225, Manhattan Beach, CA 90266, Order/info: 213/545-2996

Family Heritage File

Most powerful genealogy program on the Mac. Licensed vers. of *Personal Ancestral File*,™ produced by the LDS Church.
 • Mac user interface • Supports all Macs & hard disks except 128K
 • Exports data to word processors/databases/modems
 • Reports: Pedigree, Family Group, Individuals, Marriages, Surnames, Documentation, etc., \$149 + \$3 s/h (Utah res. +6%). Demo \$7. Star•Com Software Systems, Windsor Park East, 25 West 1480 North, Orem, UT 84057, 801/225-1480

FAMILY ROOTS™

Do it YOUR way! Huge variety and capacity for your family history. Makes pedigree charts, person sheets, group sheets, and indices. Phased releases will add searches and much, much more. Standard Mac screens/mouse. Free brochure and sample printouts. Satisfaction guaranteed. Currently \$95, add \$22.50 per each new release (total \$185) MC/VISA/AE. Quincept, Box 216, Lexington, MA 02173, 617/641-2930, 800/637-ROOT

Graphics

MacPerspective™

Allows architects, draftspeople, and artists to rapidly construct perspective drawings of houses, buildings, or other objects. Viewpoint can easily be changed. Drawings can be printed in any size up to 100 inches. Easy to learn and use. Fast, professional program with many features, thorough manual. \$219. B. Knick Drafting, 313 Marlin Pl., Melbourne Beach, FL 32951, 305/727-8071

MGMStation—Prof. CAD

By Micro CAD/CAM, Inc. is a high powered CAD program for the Mac similar to AutoCAD. MGM boasts over 140 powerful functions including: x-y coordinate input, polar or digital data input, 100 power zoom accurate to 4 decimals, tangent drawing tools and much more! \$799. Demo disk and/or VCR tape available. CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

VersaCAD

VersaCAD, with more than 40,000 systems in use worldwide, is now available on the Macintosh®. Floating point precision guarantees 16 decimal place accuracy. Features include: DXF & IGES translators included, directly accesses the math coprocessor, sophisticated object attributes grouping, & 250 layers. CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

MiniCAD 3.0

By Diehl Graphsoft boasts 1000+ power zoom, symbol library, 40 layers, auto-dimensioning, double-line tool, clip/add/intersect polygons tools, object snap, fillet & trim-lines tools, object sizer & locator, 9 decimals accuracy, full 2-D & 3-D modes, etc. It reads MacDraw & MacDraft files. \$495. Demo avail. CompServCo., 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

MacPlot & MacCAD

MacPlot by Microspot is a powerful plotter driver that will plot any object-oriented graphics produced on the Mac in up to 30 colors/pens. MacPlot supports over 50 plots. MacCAD is a series of 12 separate architectural & engineering template symbol libraries for use with MacDraw, MacDraft, MiniCAD, etc. CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

GraphPainter™

For desktop publishing to data analysis. Does scatter, line, area, bar, column, overlays, log, semilog, multiaxis, multiseries & more. You control scaling, grids, markers, patterns, etc. Finish with the paint tools & 7 curve fits. I/O with popular programs and LaserWriter. 512K+ req. \$60, MC/VISA. Brasel Software, P.O. Box 4274, Chesterfield, MO 63006, 314/256-3317

Real-time Design

ACP Vision is a software design tool using the MASCOT method of ACP dataflow diagrams. Complex diagrams can be hierarchically organized with links between levels shown in each window. Provides diagram layout, design reports, and design checks. One year of updates. \$150. VISA or P.O. Andyne Computing Limited, 544 Princess St. #202, Kingston, Ontario Canada K7L 1C7, 613/548-4355

Imports

Japanese Software

E/G Word (Ergosoft Inc.) is a Japanese word processor; can turn romaji sentences into kana & kanji. \$399. Req. 512K. Also: E/G Bridges \$249. SWEET JAM 3.0 (A & A Co. Ltd.) Input Japanese in major Mac application software, \$200.
 • Japanese Clip-Art Vol. 1 & 2, \$79.95 ea.
 • Mac Calligraphy simulates medium of ink & brush on paper \$149.95. (Enzan Hoshigumi Co.) Qualitas Trading Co., 6907 Norfolk Rd., Berkeley, CA 94705, 415/848-8080





The Macworld Catalog

Investment

Profits!

... get the profitable trades, cut losses with dozens of trend and momentum studies. Includes moving averages, relative strength, stochastic, point & figure, and many more. Great charts, automatic download. Acclaimed by investors, brokers, and traders. **Profits™** \$495 plus \$4.95 shipping and handling. California residents add 6% tax. MC/Visa order by calling 1-800-628-2828 ext. 403. Free information

Button-Down SOFTWARE
P.O. Box 19493
San Diego, CA 92119

CIRCLE 620 ON READER SERVICE CARD

Investment Software

• **Stock Portfolio System**, a complete portfolio manager incl. 13 reports, tie to Dow Jones or manual update. Handles diversified investments. **Market Link**, auto fetch up to 120 quotes up to 8 times in unattended mode. Tie to DJ or Source. Bridge quotes to 1-2-3. • **Wall Street Techniques**, complete charting & momentum analysis. Tie to Source or DJ. Free brochure +100% rebate offer.

Smith Micro Software, P.O. Box 7137, Huntington Beach, CA 92615, 714/964-0412

The Investor

A powerful portfolio-management system designed especially for the Mac. For the sophisticated investor who manages a portfolio of financial securities such as stocks, bonds, options, funds, and treasury issues. The program accommodates cash & margin accounts. Modem required for auto-update via Dow Jones News/Retrieval. All Macs, 512K req. *Not copy protected.* \$150. Money-back guarantee.

P3, Inc., 246 Nottingham Ave., Glenview, IL 60025, 312/729-2555

The Right Time System

The Stock Index & Futures programs generate accurate Buy/Sell signals for individual stocks, indexes and commodities. The software was developed by an expert portfolio manager for his own personal use & are now available for any smart trader who wants to make quick profits. Call or write for free info.

T.B.S.P. Inc., 2265 Westwood Blvd. #793, Los Angeles, CA 90065, 213/312-0154

Languages

FORTTRAN in MPW

Language Systems FORTRAN is a full-featured FORTRAN 77 compiler integrated with MPW. Full ANSI FORTRAN 77 plus extensions. SANE numerical calculations and data types incl. COMPLEX*16. Generates 68000, 68020 & 68881 object code. Supports arrays greater than 32K. Link with Pascal, C, MacApp., Mac+, SE, Mac II. **Language Systems Corp.**, 463 Carlisle Dr., Herndon, VA 22070, 703/478-0181

Mail Order

16 Day Rental on Mac Software Telecom Software Review

1-800-MAC-TSR0

(1-800-622-8770)

All Fees Apply To Purchase

Bus.Sense-65.90, CalendarMaker-7.90, Canvas-23.90, CricketGraph-24.90, Coach-12.90, dBaseMac-64.90, DeskPaint-18.90, Fast Back-12.90, Fonts-9.90, Games-7.90/up, GraphicWorks 1.1-15.90, Image Studio-59.90, In-House Acct.-19.90, Jam Session-7.90, MacProof-23.90, McMax-38.90, MGMS-149.90, MicroPlanner+-65.90, MiniCad-74.90, Pixel Paint-61.90, Post Art-10.90, Pro3D-49.90, Quickeys-13.90, RSG-4-61.90, Sentinel-21.90, Suitcase-8.90, Video Works II-26.90, MS Works-35.90, MS Write-23.90

Plus Hundreds More In Stock

And Hardware Too!

CMS SCSI Drive & Tape Units

CALL FOR LOWEST PRICES AVAILABLE ANYWHERE

TS60E Tape Back Up - \$799.00 - MacScan LS 300 \$1189.00

Our Second Year for the Business Mac

TSR - 3723 East 83rd Street, Tulsa, OK. 74137

MasterCard

In Ok. 918-496-1140

Visa & COD

CIRCLE 614 ON READER SERVICE CARD

COMPUTER COURTESY WARE

- Vol. 1: 200+ Fonts \$22.00
- Vol. 2: 200+ Desk Accessories \$22.00
- Vol. 3: Games \$22.00
- Vol. 4: Utilities \$20.00

Add \$3 to total order for postage and handling.
Above prices are for double-sided disks.
Add \$6 per volume for single-sided disks.
Massachusetts residents add 5% sales tax.

Send SASE for free list of other software
(Software authors wanted.)

Send check or money order to:

COMPUTER COURTESY WARE
P.O. BOX 1355
BOSTON, MASSACHUSETTS 02205

CIRCLE 623 ON READER SERVICE CARD

Mathematics

PowerMath

Solves problems from simple algebra to complicated calculus expressions. You can differentiate, integrate, plot polynomial expressions, manipulate matrices, solve simultaneous equations, and create custom functions. If you are a student, engineer, or work with math, you'll love the easy-to-use versatility. Retail \$100.

Central Products Corp., 2211 Norfolk #518, Houston, TX 77098, 713/529-1080

Medical

Medical & Dental Mgmt.

Entering our second decade. Solo or multipractitioner office includes patient (responsible party) billing, recall, paper/electronic claims, aging, collections, SuperBill, labels, diagnostic history, *Word/MacWrite*, audit & productivity reports. 24-hr. support. 512K+ hard disk or XL, MacSE & II. *Mac Office*. Demo from \$100. VISA/MC. 2400+ dealers.

CMA Micro Computer, 55888 Yucca Trail, P.O. Box 2080, Yucca Valley, CA 92286-2080, 619/365-9718

Music/Midi

Call 1/800/FOR MIDI

MIDI for everyone! Start your computer/MIDI system today with discount prices & expert help from FUTURE MUSIC. You don't have to be a PRO—most of our customers are just "plain folks" with a home computer and a love of music. Call for FREE CATALOG of Hardware, Software, Synthesizers, 4-tracks and more. All major brands avail. **Future Music Inc.**, 900 W. First St., P.O. Box 1090, Reno, NV 89504, 702/826-6434

Mac to Midi Made Easy!

Make the Right Choices

We have designed MAC based system for headline superstars and 1st time users. We offer: • Expert advice • Complete systems design. We sell: • All midi interfaces, software, accessories • All major synths & samplers • At discount prices. Why settle for less than the best?

TekCom Corporation, 1020 N. Delaware Ave., Philadelphia, PA 19125, 215/426-6700

The Macworld Catalog

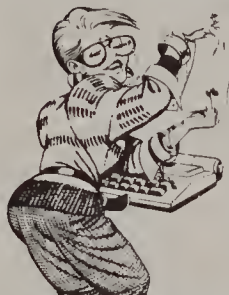
Office Mgmt.

Order House™

Integrated business environment, *Order House* is a multiuser, multi-station application that integrates all the functions of a business. Includes sales and purchase orders, invoices, inventory, and accounting. Also features notes and list-mgmt., pictures, forms-mgmt., labels, and merged letters. We specialize in custom tailoring. Demo with video training tape avail. Call or write: *Elefant Software*, 724 Allston Way, Berkeley, CA 94710, 415/843-7725

Printer Drivers

Printer choice on your Mac



The PRINT-LINK™

For graphic printing with a wide variety of Ink Jet or Dot Matrix printers. (9 & 24 pin.)

\$62

MAC DAISY LINK™

For letter quality printing, with typewriters, Daisywheel printers and lasers (in Qume or Diablo emulation).

\$82

Cables optional \$22.95

GDT Softworks Inc.

P.O. Box 1865, Point Roberts, WA. 98281
Inquiries: (604) 291-9121 To Order: 800-663-6222

Macintosh™ is a trademark licensed to Apple Computer, Inc.. The PRINT-LINK™ & MAC DAISY LINK™ are trademarks of GDT Softworks Inc.

CIRCLE 627 ON READER SERVICE CARD

Payroll

Time Saver Payroll™ V.4.0

NOW EVEN BETTER • COMPLETE FULL FEATURED Payroll system.

- Salaried, hourly, comm. & tip wages
- 11 deductions, incl. fed., state & local taxes
- 401k deductions
- Tax tables easily edited by user
- Monthly & quarterly reports, incl. 941, FUTA/940, SUTA
- Prints checks and W-2 forms
- *Flexible—easy to use!* Requires Microsoft Excel \$99.50 + \$3 s/h. MC/VISA/Chk. Demo \$15 + \$3 s/h (applied to purchase).

Western Software Associates, 110 El Dorado Rd., Walnut Creek, CA 94595, 415/932-3999

Programming Tools

POWER DEVELOPMENT TOOLS

- Programmer's EXTENDER
Vol 1: Macintosh User interface
Vol 2: lists, printing, graphics, tiling, popups
- EXTENDER GRAFPAK
high quality color graphs - bar, line, log; customizable symbols, grid patterns

Invention Software
313-996-8108

CIRCLE 629 ON READER SERVICE CARD

Public Domain

3100 Programs•Tips•Nwsltr

No club has more programs or a better newsletter. Members in 35 countries. 1-time \$8.50 subscription gets you our intro. disk w/13 terrific programs + disk w/description of our HUGE library of over 3000 programs PLUS our quarterly newsletter filled with tips and new programs. Members pay \$7 for any disk (plus \$1 s/h).

PD Mac, Dept. 24, P.O. Box 5626, Sherman Oaks, CA 91423

The Biggest Small Investment You Can Make.

Take advantage of the direct link with your buyers that maximizes exposure at a low cost.

The *Macworld Catalog* reflects the expanding corporate Macintosh audience whose purchasing activities increasingly include mail order. The cost-effective direct response advertising available monthly in *The Macworld Catalog* links you instantly with nearly 500,000 qualified buyers.

Get into the link. Call 800.888.8622 and place your ad now!

800.888.8622

Plotter Drivers

Plot-It

Now with professional fonts & background plotting for MacDraw, MacDraft, MacProject, MacPaint... on Apple, HP, Houston plotters; A-E sizes; MultiFinder compatible.

\$125

Mesa Graphics
P.O. Box 600
Los Alamos, NM 87544
(505) 672-1998

CIRCLE 633 ON READER SERVICE CARD

Project Management

AEC Info. Manager™

Powerful, easy-to-use project-oriented database designed specifically for the *design* and *construction* industries. Allows project managers to schedule, organize and track: • Correspondence • Transmittals • RFI's • Revisions • Change Orders • Submittals • Shop Drawings • Punch Lists • Projects. First of its kind!

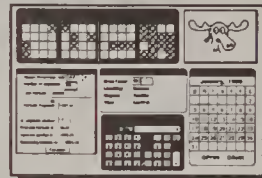
AEC Management Systems, Inc., 20524 Amethyst Ln., Germantown, MD 20874, 301/428-3694



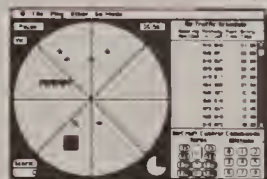
HyperPAK 100
(Volume I or II)

Recipe Box from the HyperPAK 100™

DeskPAK 200



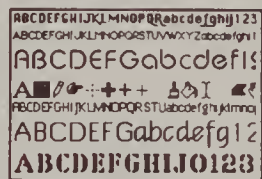
Samples from the DeskPAK 200™



GamePAK 100

A.T.C. (SW) from the GamePAK 100™

FontPAK 200



Several fonts from the FontPAK 200™



SoundPAK 150

Keyboard from the SoundPAK 100™

UtilityPAK 150



Layouts from the UtilityPAK 150™



ArtPAK 250

Art samples from the ArtPAK 250™

Each PAK only \$25.00

Each PAK on 4 double sided disks. Save even more: take any 3 for only \$69.95, or any 6 for only \$129.95!

(800) 356-3551 (913) 271-6022
ORDER TOLL FREE! CUSTOMER SERVICE:

Ordering hours: 7:30 AM-6:30 PM CST M-F, 9:00 AM-4:00 PM CST Sat. Add \$4.00 per order S&H (\$7 Canada, \$12 foreign). 2nd day & overnight delivery available. KS orders add 5%. Thousands of satisfied customers in over 40 countries have made Budgetbytes their #1 choice for Macintosh Public Domain and Shareware. You'll find the best service, the best selection, and the best prices. Choose from over 3,500 programs on over 500 disks, and never pay more than \$3.50 per single sided, or \$6.50 per double sided disk again! No membership fees or no club to join. Just great software at honest prices. Send \$1.00 for our 140 page catalog and start getting more bytes for your buck, today!

Budgetbytes

P.O. Box 2248, Topeka, KS 66601

Please support Shareware by sending registration fees to programmers!

CIRCLE 601 ON READER SERVICE CARD

The Macworld Catalog

Real Estate

Property Management

Comprehensive program for managing residential and commercial properties. Many management reports, including operating statement, delinquent rent, lease expiration, and transaction register. Provides check writing, check reconciliation, posting late fees, recurring expenses—\$395. Investment analysis—\$245.

Yardi Systems, 930 Laguna St., Santa Barbara, CA 93101, 805/966-3666

Real Estate Solutions

- **Track™** clients & real estate interests, contact history, appointments & expenses. And mail labels, autodialer, XTRAS™. \$395
- **Lead™** - manage buyer & seller leads, sales, and follow-up. Measure effectiveness of Ads client generation & sales activities. Reports, Graphs & XTRAS™. \$595
- **For Sale™** - maintain all properties in a town or area including property descriptions, owners, occupants, contact history, assessments & sold \$ info. Mail labels & XTRAS™. \$695
- **List™** - property listing system for all types of property. Include digitized pictures. Extensive reports, graphs, searching & sorting. User-customizable. Multi-User. \$795
- **The Financial Analyzer™** Reports for buyers & sellers, buyer qualification, home ownership benefit, IRR, amortization, depreciation, loan tables, & more! \$295
- **Prospect™** - Customizable client management system for any business. Contact history, mail labels, reports, and autodialer. \$395

Hypercard slideshows \$15 each, 3 for \$30. Call about new products planned for 1988.

Softworks Inc
PO Box 2285
Huntington, CT 06484
(203)926-1116



CIRCLE 612 ON READER SERVICE CARD

New from RealData — Real Estate Investment Analysis, Version 6.0

Real Estate Investment Analysis has been our best-selling product since it was introduced in 1982. Many software products have come and gone over the years, but RealData and our *Investment Analysis* have stood the test of time. Now Version 6.0 adds new power to this popular program.

What can it do? *Real Estate Investment* allows you to make ten-year projections of the income, expenses, cash flows, re-sale and tax implications of your property. It performs virtually all of the complex Tax Reform, financing and rate-of-return calculations for you in just seconds. It also includes a lease analysis and annual operating statement

Real Estate Investment Analysis, Version 6.0 runs with Microsoft Excel™ or Works™ on the Mac 512 or greater — just \$250.

To order, call or write today. MC, VISA, AMEX Welcome or send \$2 for our catalog of real estate software for the Mac and PC.



78 North Main St.
South Norwalk, CT 06854
(203) 255-2732

CIRCLE 610 ON READER SERVICE CARD

Loan Amortization

AmPack is a straightforward loan-amortization software package designed by a CPA & tax attorney. *Am-Pack* supports variable rates, graduated, skipped, & principal-only payments. Also includes balloons, negative amortizations, customized schedules, loan analysis, & more. \$49.50 + \$5 s/h. MC/VISA. Softflair, Inc., 8753 Park View, Milwaukee, WI 53226, 414/778-7200

Property Management



MacLord™

- Complete Accounting
- Repair Manager
- Tenant Manager

Demonstration version available

(714) 687-1919

9487 Magnolia Avenue
Riverside, CA 92503

CIRCLE 606 ON READER SERVICE CARD

NEW Realty Programs!

- **Sales Associate:** Records Mgmt. system for realty salespeople. Tracks contacts & properties.
- **Property Manager:** Accounting System for houses, apts. & commercial property.
- **ProAnalysis:** Sophisticated realty investment analysis.
- **The Mortgage Office:** Office automation system for mortgage brokers.

Metropolis Software Inc., 14555 DeBell Rd., Los Altos Hills, CA 94022, 415/322-2001

Information Network

Decentralized real estate information network. Design your own layouts (with pictures) and stand-alone or point and click to share with other brokers. Full indexing, E-Mail, automated digital pager access, etc. Annual membership available to licensed brokerages only.

Armchair Commerce Inc., 310 Wellington Rd. S., London, Ontario, N6C 4P4, Canada 519/433-3905

Rental

Original MacLibrary, Inc.

Try before you buy... low 16-day rental rates that apply towards purchase—no obligation to buy. We offer a huge selection of Mac software. All the popular programs plus plenty of hard-to-find titles. No fees. Free membership. Special discounts for rapid returns. Plus FREE assistance HOT LINE. Whatever you're looking for, if it was made for the Mac, we probably have it... at LOW RATES.

The Original MacLibrary, Inc., 17280 Newhope St. #3, Fountain Valley, CA 92708, 714/957-5767, 800/426-2777 (CA), 800/622-4774 (Nat'l.)

Retail

db:\$ Retailer Advantage™

Turns Macs into cash registers supporting inventory control, receivables, POs. This powerful system compares to others costing 4X. Retailers are different & a whole menu of programs supports the way you do business. Discounting & quantity pricing supported. Whether you sell durable or apparel items, this can do it for you. System may incl. a cash drawer, slip printer, ImageWriter & 20MB Mac. Turnkey systems from:

db: Solutions, 230 Link Rd., #300, Fairfield, CA 94585, 707/864-4246 or a db: agent or authorized reseller

Sales/Marketing

MarketMaster for Mac

Automatic Sales Inquiry Follow-up! Enter leads whenever you get them and *MarketMaster™* contacts the right people the right way at the right time. Prints letters & envelopes, phone lists, scripts, and NEVER FORGETS! Easy to learn and use. Frees salespeople to SELL and supports them to SELL MORE! Breakthrough Productions, 10659 Caminito, Cascara, San Diego, CA 92108, 619/281-6174

Scientific

Expressionist™

An equation editor that generates typeset quality mathematical expressions for any WP or DTP document. Awarded five mice in *Mac-User* review: "It's exactly the equation processor you'd write for yourself....Equation manipulation has never been easier." DA for 512KE through II. Send \$79.95 + CA tax + \$2.50 to: Allan Bonadio Associates, 1579 Dolores St. #10, San Francisco, CA 94110, 415/282-5864

The Macworld Catalog

Security

Advanced Copy Protection

The leading software manufacturers depend on Softguard copy protection. Introducing our *Protection Kit*, a complete copy protection system that runs on the Macintosh®.

- Stops all copybusters
- FULL HARD DISK support
- No source code changes
- Compatible with all Macintosh® systems. Free demo disk.

Softguard Systems, Inc., 710 Lakeway #200, Sunnyvale, CA 94086, 408/773-9680

Statistics

CLR ANOVA

Analysis of variance program that can compute up to a 10-way design with repeated measures and unequal *n*. Marginal means, plots of interactions, simple effects, range tests, contrasts, and more. Full Mac interface. Can read text files w/entries separated by spaces, commas, or tabs. \$75 + \$3 s/h.

Clear Lake Research, 5615 Morningside #127, Houston, TX 77005, 713/523-7842

RATS! Version 2.1

Best-selling econometrics software program. Now available on the Mac. Multiple regression, including stepwise, 2SLS, logit, probit, and much more! Forecasting with AR-IMA, VAR. Exponential smoothing, model simulations, support for daily/weekly data. \$300. VISA/MC. 512K + external drive.

VAR Econometrics, Inc., P.O. Box 1818, Evanston, IL 60204-1818, 312/864-8772, 800/822-8038



Utilities

Copy II Mac

Great disk utilities (Mac Tools) featuring Disk recovery program that support floppy & hard disks. Backs up nearly all protected software quickly, easily! Includes Copy II Hard Disk, which copies many protected programs direct to your hard disk so you can run them without a key disk. For Mac/Mac Plus, 1 or 2 drives. All 3 for \$39.95 + \$3 s/h. VISA/MC/Chk.

Central Point Software, Inc., 9700 SW Capitol Hwy. #100, Portland, OR 97219, 503/244-5782

Vertical Applications

Graphic Astrology

Accurate, easy-to-use GA calculates, displays & prints charts and other data. Basic \$39.50. Advanced \$129.50. Introducing the Gamma Version for \$199.50. Faster, uses more of Mac Toolbox, Multiple Windows, more options & documents. Converts to MacPaint. Supports Laser & Mac II. VISA/MC OK. Info. upon request.

Time Cycles Research, 27 Dimmock Rd., Waterford, CT 06385, 203/444-6641

MAC-A-MUG PRO

A complete, professional system for generating composite human faces. It provides a means for non-artist, law enforcement personnel to quickly assemble realistic composites based on eyewitness descriptions. Easily reproportion faces, edit with on-screen tools. Many print formats, frequent updates. \$495 (MC/VISA, school pricing, approved PO.) Shaberazam, P.O. Box 26731, Milwaukee, WI 53226, 414/442-7503

Word Processors

MacΣqn/Equation Writer

MacΣqn is a desk accessory equation processor that lets you include complicated mathematical equations in your technical documents, MacΣqn supports integrals, sums, products, multiline expressions, roots, super & subscripts on the same character. Automatic character sizing etc., \$44.95. Educational discount available. Version 2.1 now being released.

Software for Recognition Technology, 55 Academy Dr., Rochester, NY, 14623, 716/359-3024

Miscellaneous Mailing Lists

MAILING LIST of Mac Users



Labels,
tapes,
or
disks.

Over 400,000 names to choose from!

Use our \$50/1,000-name low-cost list with no charge for selecting, sorting, media, or delivery.

Choose any quantity. Or use our 25¢/name complete mailing service, postage included! Ask for our state counts. Semaphore Corporation, 207 Granada Dr., Aptos, CA 95003, (408) 688-9200.

CIRCLE 611 ON READER SERVICE CARD

Publications

MACMENU™ GUIDE to 2,600 software titles

Available from MENU®, this guide lists the title, vendor name, retail price, system requirements and brief description of each program..... JUST \$ 9.95

1-800-THE-MENU

CIRCLE 631 ON READER SERVICE CARD

Info graphics guide

Beginners and experts can now purchase an info graphics tutorial, **Graphically Sound and Factually Fit**, by Steve Segal.

Included are: A getting-started check list, color separating, bibliography, extensive tips, using MacDraw and Cricket Graph, assorted software review, graphic theory and examples. The book was paginated entirely on the Mac.

Send check or money order for \$10 per copy (\$15 USD for Canadian orders) payable to Steve Segal to:

Steve Segal
Eagle-Trib., Box 100
Lawrence, MA 01842
(Bulk discounts available)

CIRCLE 630 ON READER SERVICE CARD

Video Instruction



Create Stunning Documents with Cricket Draw 1.1

Complete Training System includes:
2 1/2 hr. VHS tape, Users' Guide, Samples & Nitney Help Desk Accessory
\$79.00 + \$5.00 p&h

NITNEY SYSTEMS
22500 Muirlands, El Toro, CA 92630
Visa/MC Phone Orders (714) 472-8167

CIRCLE 634 ON READER SERVICE CARD



Satisfaction

Software

Ann Arbor
Full Paint\$59

Ashton Tate
DBase Mac\$299

Borland
Reflex+\$175
Reflex\$58
Turbo Pascal.....\$60
Sidekick 2.0.....\$64

MicroSoft
Chart\$75
Excel\$225
Power Point.....\$249
Word\$235
Write\$109
Flight Simulator.....\$32

Practical Computer
Mac Golf\$45
Mac Raquetball\$45

Sublogic
Jet\$45

Cricket Software
Cricket Draw.....\$170
Cricket Graphic\$120

LetraSet
Ready, Set, Go!\$249

Living Videotext
ThinkTank 512K.....\$119

Monogram
Dollars & Sense\$85

Silicon Beach
SuperPaint.....\$69
Dark Castle\$29

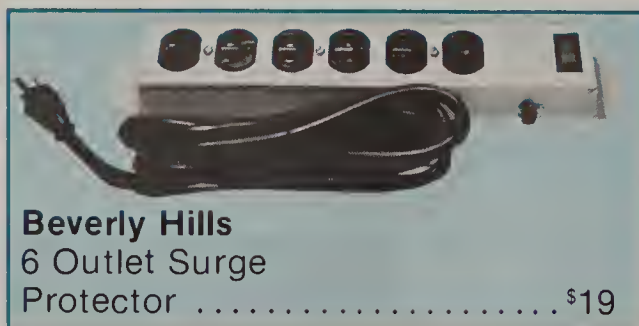
Think Technologies
LightSpeed Pascal\$65
LightSpeed C\$95

Accessories

Kensington Microware
Printer Muffler 80\$38
Printer Muffler 132\$49
System Saver\$63
Turbo Mouse\$80
Turbo Mouse ADB\$80
Universal Printer Stand\$15
Mouse Pad.....\$8
Security System.....\$34
Tilt & Swivel\$22

Mouse Systems

A+ Mouse.....\$69
A+ ADB Mouse.....\$79



Beverly Hills
6 Outlet Surge
Protector\$19

3 1/2" Disk Box with keylock.....\$9
2 pos-9 pin Switchbox.....\$39
4 pos-9 pin Switchbox.....\$59
2 pos-DIN style Switchbox.....\$39
4 pos-DIN style Switchbox.....\$59

Carrying Cases

CM7 Tall Bag for
extended keyboard\$75
CM6 for standard
+/SE keyboard\$70
CFP Wide Bag\$80

Dust Covers

Mac/+/SE\$14
Mac Keyboards (specify type) ..\$9
Mac II CPU only\$10
Mac II with mono monitor\$19
Mac II with color monitor\$19
Mac II with color monitor
and stand.....\$19
Apple Imagewriter.....\$9

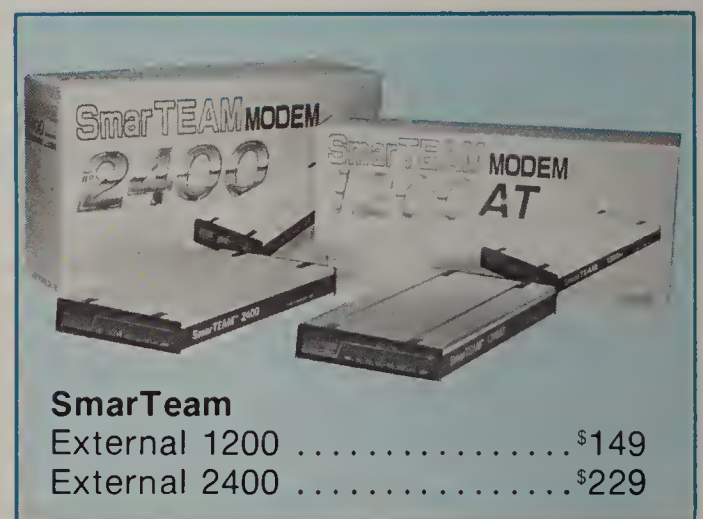
Scanners

AST
Turbo Scan\$1385

Microtek
300C Sheet Feed\$1299
300C Flat Bed.....\$1475
300A Sheet Feed\$1995
300G Flat Bed.....\$2995
OCR Software\$179
SCSI Option\$249

Modems

Hayes
External 1200\$299
External 2400\$439
Modem Cables\$19



SmarTeam
External 1200\$149
External 2400\$229

Beverly Hills
External 1200\$129
External 2400\$199

Everex
2400 with cable\$229

Migent
Pocket Modem\$168

JT Fax
Fax Modem\$595

DCA
Mac Irma-Mac II or SE\$795



Computer professionals since 1975.

1-800-426-8166

From Beverly Hills
(213) 273-3710

Fax Machine
(213) 675-2522

279 South Beverly Drive, Suite 1200, Beverly Hills, California 90212



Circle 5 on reader service card

guaranteed.

Hard Drives

Everex

External 20D	\$525
External 40D	\$945
91D (II, SE, Plus only)	\$1445

Zero Footprint

20 DLX	\$575
40 DLX	\$1025
40/60 DTL	\$1795

Everex Internal for Mac II

20 ID	\$445
40 ID	\$845
91 ID	\$1395

Tape Back-up

Everex 60 Megabyte External

60T	\$895
-----------	-------

CMS 60 Megabyte External

TS-60	\$745
-------------	-------

Irwin External

40 Megabyte Easytape software included	\$995
64 Megabyte Easytape software included	\$1295
DC 2000 Tape Cartridge	\$30

Laser Printers

Laser Connection

PS Jet Plus	\$4295
PS Jet	\$3895
Black Toner	\$95

Hewlett Packard

LaserJet II	\$1795
-------------------	--------

NEC

LC890	\$3695
-------------	--------

AST

TurboLaser PS	\$3195
---------------------	--------

Epson Printers

FX-86e, FX-286e, LQ-500, LQ-850 LQ-1050, LQ-2500, Call for prices	
--	--

Low prices, fast service



Beverly Hills

40 Megabyte External SCSI Hard Disk System	\$695
Limited quantity	

CMS Mac Stack SD Series

(Mac Plus, SE, II)

SD 20 Megabyte	\$550
SD 43 Megabyte	\$795
SD 60 Megabyte	\$895
SD 80 Megabyte	\$1250
SD 102 Megabyte	\$1350
SD 140 Megabyte	\$1895

CMS Pro Series Internal Mac SE/II

20 Megabyte	\$495
20 Megabyte SE rear	\$495
40 Megabyte	\$845
40 Megabyte SE rear	\$845
43 Megabyte Mac II	\$645
60 Megabyte Mac II	\$745
80 Megabyte Mac II	\$1145
100 Megabyte	\$1495
100 Megabyte SE rear	\$1495
102 Megabyte Mac II	\$1245
140 Megabyte Mac II	\$1795
150 Megabyte Mac II	\$1995
300 Megabyte Mac II	\$2995

Dove Computer

MacSnap Tool Kit	\$15
SCSI Interface	\$95
MacSnap 524	\$170
MacSnap 524S	\$215
MacSnap 548	\$395
MacSnap 548S	\$450
MacSnap 2S	\$485
MacSnap 4S	\$950
MacSnap 8S	\$1895
MacSnap Plus 2	\$285
MacSnap Plus 4H	\$895
RAM Snap (RAM Disk)	\$20

Monitors

Sigma Designs Laserview

15" Mac SE	\$1299
19" Mac SE	\$1699
15" Mac II	\$1349
19" Mac II	\$1749



Thompson

Ultra-Scan 640 x 480, 256 Colors with cable for Mac II	\$549
---	-------

NEC

MultiSync II	\$649
MultiSync Plus	\$995
MultiSync XL	\$2295



Epson LX-800

9 pin, 180 cps	\$199
Grappler C/Mac	\$65

Epson LQ-800

24 pin, 180 cps	\$299
Grappler LQ	\$79

OUR POLICY

- Plain and simple, Hardware; your satisfaction guaranteed or your money back.
- Software; defective software will be replaced immediately. Manufacturers policies prohibit us from offering refunds on opened software.
- We accept most major credit cards with no surcharge added.
- Your credit card is not charged until we ship.
- Please allow 10 days for personal and company checks to clear.
- C.O.D. orders accepted.
- We gladly accept purchase orders from most major institutions.
- California and Texas residents please add the appropriate local sales tax.
- To place orders call Monday thru Friday 8:00 AM to 6:00 PM P.S.T.

SHIPPING

All items in stock will ship in less than 24 hours. We offer daily service from Federal Express, UPS, U.S. Postal Service. UPS Ground Shipments, please add 50¢ per pound. UPS Air Shipments, please add \$1 per pound. Minimum shipping and handling charge \$4.00.

Product Index

Reader
Service
Number

■ Software

Business

- 464 Activision, 30-31
- 146 Alpha Micro, 122
- 463 AST Research, Inc., 62-63
- 10 Bedford Software Corporation, 206-207
- 199 Borland, 9
- 80 Business File Vision, 22
- 130 CE Software, 106
- 147 CE Software, 107
- 581 Check Mark Software Inc., 86
- Claris Corporation, 97-99
- 84 Compatible Systems, 218
- 71 Educomp, 60
- 150 Farallon Computing, 110
- 156 Great Plains Software, 214-215
- 151 Innovative Data Design Inc., 53
- Intuit, 13
- 128 Layered, 14-15
- 34 Macromind, 112
- Microsoft, IFC-1, 73-75
- 253 Paragon Concepts, Inc., 218
- 42 Personal Training Systems, 24
- 68 PMC Telesystems Inc., 68
- Satori Software, 35
- 139 Softsync, Inc., 19
- 48 Software Ventures, 20
- 405 Solutions International, 40
- 227 Statsoft, 34
- Supermac Technology, 59
- 96 THINK Technologies, 7
- 81 TOPS, 37
- 83 T/Maker, 114
- 332 T/Maker, IBC
- 67 Versacad Corporation, 238
- 144 Videx Inc., 69
- 126 WordPerfect Corporation, 188-189

Vertical

- 581 Check Mark Software Inc., 86
- 151 Innovative Data Design Inc., 53
- Satori Software, 35
- 154 Sixty Eight Thousand, Inc., 54
- 67 Versacad Corporation, 238

Data Management

- 73 Ashton-Tate, 94-95
- 80 Business File Vision, 22
- 72 Nashoba, 33
- 144 Videx Inc., 69

Word Processing

- 180 Deneba Software, 87
- 28 Microlytics, 242
- Microsoft, 42-43
- 253 Paragon Concepts, Inc., 218
- 332 T/Maker, IBC
- 126 WordPerfect Corporation, 188-189

Reader
Service
Number

CAD/CAM

- 129 Gimeor Inc., 89
- 67 Versacad Corporation, 238

Communications

- 463 AST Research, Inc., 62-63
- 40 DataViz, 208
- 232 Dayna Communications, 223
- 150 Farallon Computing, 110
- 145 LaCie, 44
- 48 Software Ventures, 20
- 96 THINK Technologies, 7
- 81 TOPS, 37

Educational

- 80 Business File Vision, 22
- 71 Educomp, 60
- 42 Personal Training Systems, 24

Graphics/Desktop Publishing

- 142 20/20 Data Systems, Inc., 209
- 212 Aba Software, 228
- 2 Adobe Systems, 32
- 329 Aldus Corporation, 16-17
- 61 Computer Friends, Inc., 100
- 132 Data Translation, 232
- 124 GW Instruments, 224
- Image Club Graphics, 244
- 151 Innovative Data Design Inc., 53
- 598 Letraset, 104-105
- 434 Presentation Technologies, 190
- 335 Public Domain Exchange, 251
- 13 RasterOps Corporation, 213
- 154 Sixty Eight Thousand, Inc., 54
- 153 Software Complement, 246
- 415 Software Supply, 34
- 405 Solutions International, 40
- 88 Studio Advertising Art, 68
- Supermac Technology, 50-51
- 75 True BASIC, 236
- 83 T/Maker, 114

Personal Business/Home

- 464 Activision, 30-31
- 10 Bedford Software Corporation, 206-207
- 130 CE Software, 106
- 147 CE Software, 107
- Intuit, 13
- 112 Survivor Software, 52
- 83 T/Maker, 114

Entertainment

- 211 Practical Computer Application, Inc., 58

Languages/Development Systems

- 75 True BASIC, 236

Utilities

- 199 Borland, 9
- 180 Deneba Software, 87
- 39 Olduvai, 201
- 21 Olduvai, 200
- 415 Software Supply, 34
- Supermac Technology, 59
- 248 Turner Hall Publishing, 102

Reader
Service
Number

Miscellaneous

- Buick, 101
- 581 Check Mark Software Inc., 86
- MacConnection, 124-129
- 16 MacStore, Inc., 96
- 42 Personal Training Systems, 24
- 154 Sixty Eight Thousand, Inc., 54
- 537 UpTime, 5

■ Hardware

Computer Systems

- Apple Computer, 26-27

Printers

- 61 Computer Friends, Inc., 100
- 69 Computer Friends, Inc., 46
- 104 Laser Connection, 25
- 105 Tektronix, Inc., 49
- Texas Instruments, 247-251
- 93 Varityper, 219

Boards

- 463 AST Research, Inc., 62-63
- 7 Central Point Software, 6
- 127 Clearpoint, Inc., 120
- 84 Compatible Systems, 218
- 61 Computer Friends, Inc., 100
- 132 Data Translation, 232
- 196 National Semiconductor, 76
- 114 PerfecTEK, 197
- 46 Radius, 90-91
- 13 RasterOps Corporation, 213
- Supermac Technology, 50-51

Digitizers/Scanners

- 377 Datacopy, 93
- 90 Princeton Graphic Systems, 241

Display

- 101 E-Machines, 23
- 152 Microvitec, 196
- 65 Mitsubishi Electronics America, Inc. 92
- 133 Moniterm, 225
- 136 nView Corporation, 235
- 89 Princeton Graphic Systems, 227
- 46 Radius, 90-91
- 117 Sigma Designs, 116
- Supermac Technology, 50-51

Modems

- 24 Epic Technology, 28

Hard Disk/Storage

- 97 Apple Crate, 202
- 85 CMS, 103
- 82 Irwin Magnetics, 118
- 102 Jasmine, 47
- 145 LaCie, 44
- 16 MacStore, Inc., 96
- 207 Mass Micro, 39, 41
- 206 Mass Micro, 61
- 62 Microtech International, Inc., 70-71
- 45 Open Mac, 36
- 149 Rodime Inc., 11
- 6 Tallgrass Technologies, 56-57
- 143 Tecmar, 243

Reader
Service
Number

Miscellaneous

- 91 Asher Engineering, 88
- 69 Computer Friends, Inc., 46
- 232 Dayna Communications, 223
- 86 MacProducts USA, 78
- 135 Matrix Instruments, Inc., 233
- 397 MSC Technologies, 237
- 45 Open Mac, 36
- 434 Presentation Technologies, 190
- 239 Secure-It, 247
- 144 Videx Inc., 69

■ Accessories

Floppy Disk/holders

- 562 Diskette Connection, 271
- 54 USA Flex/Comark, 209

Miscellaneous

- Anthro Corporation, 79
- 91 Asher Engineering, 88
- 9 Bede Tech, 226
- 443 Designer Products, 32
- 148 Ergotron Inc., 38
- 123 Grimes Company, 84
- 11 Kensington Microware Ltd., BC
- 30 Kensington Microware Ltd., 210
- 66 MacAssociation, 96
- 246 MacLuggage, 48
- 397 MSC Technologies, 237
- 537 UpTime, 5

Services

- GE Information Services, 85
- 86 MacProducts USA, 78
- 293 Safeware, 246

■ Mail Order

- 134 47st. Computer, 18
- 97 Apple Crate, 202
- 9 Bede Tech, 226
- 32 CDA, 220
- 14 Computer Mail Order, 108-109
- 22 Desktop Catalog, 92
- 47 Icon Review, 186-187
- MacConnection, 124-129
- 86 MacProducts USA, 78
- 16 MacStore, Inc., 96
- 78 MacWarehouse, 80-83
- 44 Programs Plus, 64-67
- 141 Software That Fits, 192-195
- 53 Tussey, 199
- 54 USA Flex/Comark, 209
- Warehouse Data Products, 252

MACWORLD

FREE PRODUCT INFORMATION

Get more information on products you're interested in—simply return one of these cards today. There's no cost. And no obligation.

(1-200)									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

Expires 8/16/88

S1

Please print or type all information.

Name	Title
Company	
Address	City, State, Zip (zip code needed to ensure delivery)
Phone: Area code/Number	

(201-400)

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400

(401-600)

401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600

MAY 1988

Check this box and fill in the appropriate information to subscribe to *Macworld*. You will be billed \$19.95 for a 1-year (12-issue) subscription (U.S. only)

CATALOG INFORMATION

601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700

EDITORIAL INFORMATION

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910
911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930
931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950

MACWORLD

FREE PRODUCT INFORMATION

Get more information on products you're interested in—simply return one of these cards today. There's no cost. And no obligation.

(1-200)									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

Expires 8/16/88

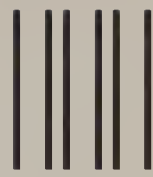
S2

Please print or type all information.

Name	Title
Company	
Address	City, State, Zip (zip code needed to ensure delivery)
Phone: Area code/Number	

(201-400)

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906

Advertiser Index



Reader
Service
Number

212 Aba Software, 228
464 Activision, 30-31
2 Adobe Systems, 32
329 Aldus Corporation, 16-17
146 Alpha Micro, 122
— Anthro Corporation, 79
— Apple Computer, 26-27
97 Apple Crate, 202
91 Asher Engineering, 88
73 Ashton-Tate, 94-95
463 AST Research, Inc., 62-63
9 Bede Tech, 226
10 Bedford Software Corpora-
tion, 206-207
5 Beverly Hills Computer, 268-269
199 Borland, 9
— Buick, 101
80 Business File Vision, 22
32 CDA, 220
130 CE Software, 106
147 CE Software, 107
7 Central Point Software, 6
581 Check Mark Software Inc., 86
— Claris Corporation, 97-99
127 Clearpoint, Inc., 120
85 CMS, 103
84 Compatible Systems, 218
61 Computer Friends, Inc., 100
69 Computer Friends, Inc., 46
14 Computer Mail Order, 108-109
132 Data Translation, 232
377 Datacopy, 93
40 DataViz, 208
232 Dayna Communications, 223
180 Deneba Software, 87
443 Designer Products, 32
22 Desktop Catalog, 92
562 Diskette Connection, 271
71 Educomp, 60
24 Epic Technology, 28
148 Ergotron Inc., 38
101 E-Machines, 23
134 47st. Computer, 18
150 Farallon Computing, 110
— GE Information Services, 85
129 Gimeor Inc., 89
156 Great Plains Software, 214-215
123 Grimes Company, 84
124 GW Instruments, 224
47 Icon Review, 186-187
— Image Club Graphics, 244
151 Innovative Data Design Inc., 53
— Intuit, 13
82 Irwin Magnetics, 118
102 Jasmine, 47
11 Kensington Microware Ltd., BC
30 Kensington Microware Ltd., 210
145 LaCie, 44
104 Laser Connection, 25
128 Layered, 14-15
598 Letraset, 104-105
66 MacAssociation, 96
— MacConnection, 124-129
246 MacLuggage, 48
86 MacProducts USA, 78
34 Macromind, 112
16 MacStore, Inc., 96
78 MacWarehouse, 80-83
206 Mass Micro, 61
207 Mass Micro, 39, 41
135 Matrix Instruments, Inc., 233
28 Microlytics, 242
— Microsoft, 42-43
— Microsoft, 11C-1, 73-75
62 Microtech International, Inc., 70-71
152 Microvitec, 196
65 Mitsubishi Electronics America,
Inc., 92

Reader
Service
Number

133 Moniterm, 225
397 MSC Technologies, 237
72 Nashoba, 33
196 National Semiconductor, 76
136 nView Corporation, 235
21 Olduvai, 200
39 Olduvai, 201
45 Open Mac, 36
253 Paragon Concepts, Inc., 218
114 PerfectTEK, 197
42 Personal Training Systems, 24
68 PMC Telesystems Inc., 68
211 Practical Computer Application
Inc., 58
434 Presentation Technologies, 190
89 Princeton Graphic Systems, 227
90 Princeton Graphic Systems, 241
44 Programs Plus, 64-67
335 Public Domain Exchange, 251
46 Radius, 90-91
13 RasterOps Corporation, 213
149 Rodime Inc., 11
154 Sixty Eight Thousand, Inc. 54
293 Safeware, 246
— Satori Software, 35
239 Secure-It, 247
117 Sigma Designs, 116
139 Softsync, Inc., 19
153 Software Complement, 246
415 Software Supply, 34
141 Software That Fits, 192-195
48 Software Ventures, 20
405 Solutions International, 40
227 Statsoft, 34
88 Studio Advertising Art, 68
— Supermac Technology, 50-51, 59
112 Survivor Software, 52
142 20/20 Data Systems, Inc., 209
6 Tallgrass Technologies, 56-57
143 Tecmar, 243
105 Tektronix, Inc., 49
— Texas Instruments, 247-251
96 THINK Technologies, 7
81 TOPS, 37
75 True BASIC, 236
248 Turner Hall Publishing, 102
53 Tussey, 199
83 T/Maker, 114
332 T/Maker, IBC
537 UpTime, 5
54 USA Flex/Comark, 209
93 Varityper, 219
67 Versacod Corporation, 238
144 Videx Inc., 69
— Warehouse Data Products, 252
126 WordPerfect Corporation, 188-189

"Orders Accepted Worldwide"

Authorized Distributor
Magnetic Media Division Products

	2 Boxes	5 Boxes	10 Boxes
3 1/2" S-Side	12 ⁵⁰	11 ⁹⁵	11 ⁵⁰
3 1/2" D-Side	17 ⁵⁰	16 ⁹⁵	16 ⁵⁰
HIGH Density	47 ⁹⁵	46 ⁹⁵	44 ⁹⁵

Old Reliable
the Diskette Connection™

Delaware 1-800-451-1849
P.O. BOX 10247, WILMINGTON, DE 19850
Oklahoma 1-800-654-4058
P.O. BOX 1674, BETHANY, OK 73008
Nevada 1-800-621-6221
P.O. BOX 12396, LAS VEGAS, NV 89112

Minimum Order \$25.00. Visa, MasterCard accepted. C.O.D. orders add \$3.00. Surface Shipping: on 3.5 or 5.25" add \$3.00 per 100 disks. 8" add \$4.00 per 100 disks. UPS delivery only. U.S. mail for APD, FPD, AK, HI or PW add an additional 5% for PAL. Prices subject to change without notice!

Telex #4933362 Fax #405-495-4598



Packaged 10 Per Box


	2 Boxes	5 Boxes	10 Boxes
3 1/2" Single Side	11 ⁹⁵	11 ⁵⁰	10 ⁹⁵
3 1/2" Double Side	15 ⁹⁵	15 ⁵⁰	14 ⁹⁵

TELEX #4933362
FAX 405-495-4598

Old Reliable
the Diskette Connection™

Delaware 1-800-451-1849
P.O. BOX 10247, WILMINGTON, DE 19850
Oklahoma 1-800-654-4058
P.O. BOX 1674, BETHANY, OK 73008
Nevada 1-800-621-6221
P.O. BOX 12396, LAS VEGAS, NV 89112

Minimum Order \$25.00. Visa, MasterCard accepted. C.O.D. orders add \$3.00. Surface Shipping: on 3.5 or 5.25" add \$3.00 per 100 disks. 8" add \$4.00 per 100 disks. UPS delivery only. U.S. mail for APD, FPD, AK, HI or PW add an additional 5% for PAL. Prices subject to change without notice!



Packaged 10 Per Box

	2 BOX	5 BOX	10 BOX
3 1/2" Single Side	11 ⁹⁵	11 ⁵⁰	10 ⁹⁵
3 1/2" Double Side	16 ⁵⁰	15 ⁹⁵	15 ⁵⁰
HIGH Density	42 ⁹⁵	41 ⁹⁵	39 ⁹⁵

SONY, without labels or box
Packaged in Fifties

	50	100	400
MAC-PAC-50's			
3 1/2" Single Side	1.05 EA.	1.02 EA.	.99 EA.
3 1/2" Double Side	1.29 EA.	1.25 EA.	1.19 EA.

Old Reliable
the Diskette Connection™

Delaware 1-800-451-1849
P.O. BOX 10247, WILMINGTON, DE 19850
Oklahoma 1-800-654-4058
P.O. BOX 1674, BETHANY, OK 73008
Nevada 1-800-621-6221
P.O. BOX 12396, LAS VEGAS, NV 89112

Minimum Order \$25.00. Visa, MasterCard accepted. C.O.D. orders add \$3.00. Surface Shipping: on 3.5 or 5.25" add \$3.00 per 100 disks. 8" add \$4.00 per 100 disks. UPS delivery only. U.S. mail for APD, FPD, AK, HI or PW add an additional 5% for PAL. Prices subject to change without notice!

Telex #4933362 Fax #405-495-4598

Circle 562 on reader service card

5 good reasons to attend the MACWORLD Expo/ Boston '88

August 11-13 — Bayside Expo Center
and the World Trade Center

1. See and touch the latest Macintosh™ products. Visit hundreds of exhibits and see the newest hardware, software and peripherals available for the Macintosh.
2. Save time and money. Simply fill out and return the coupon below and we'll send you the information to pre-register for MACWORLD Expo/Boston.
3. Pick from dozens of tutorial sessions. No matter where you use your Macintosh — in the office, at school or at home, you'll be able to choose the session that's best for you.
4. Pinpoint new areas for increasing your profits. If you develop, produce or sell Macintosh products, the Industry Sessions are your opportunity to hear the latest in industry trends.
5. Apply your expertise right on the spot. Use one of the many Macintoshes available to test and fine-tune your skills.

This is the original Macintosh-exclusive computer show bringing you a world of Macintosh knowledge not available anywhere else!

Sponsored by MACWORLD, the Macintosh™ Magazine. An IDG Communications Publication.

MACWORLD is an independent trade show not affiliated with Apple Computer, Inc. APPLE and the APPLE LOGO are registered trademarks and MAC, MACINTOSH, and MACWORLD are trademarks of Apple Computer Inc.

For further information just fill in the coupon below and return it to us.

☐ Yes. I want to learn more about the MACWORLD Expo/Boston to be held on August 11-13, 1988 at the Bayside Expo Center and the World Trade Center. Please send me:

- ☐ Exhibiting information.
☐ Attending information.

**MACWORLD
EXPOSITION**
BOSTON

Name _____
Company _____
Street _____
City/State/Zip _____
Phone _____

MW1

Send this coupon to MACWORLD Expo, Mitch Hall Associates, P.O. Box 155, Westwood, MA 02090

DESKTOP PUBLISHING CONFERENCE

NEW YORK
MAY 23-27
1988

ILLUMINATING

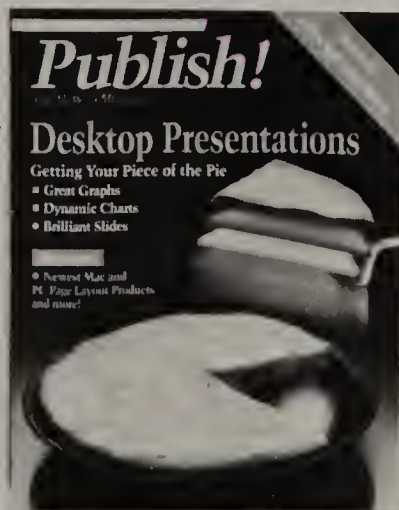
Get in on a bright idea.

Expand your desktop publishing knowledge when *Publish!* and *Folio:* magazines share their expertise at the largest publishing conference and exhibition in the U.S.

This first-time-ever learning opportunity, jointly produced by *Publish!* and *Folio: The Magazine for Magazine Management*, is geared toward desktop publishing for magazine and book publishers. More publishing professionals than ever want to adopt the new technology. That's why *Folio:* chose *Publish!* to develop the first annual desktop publishing conference for people in the publishing business.

Face to face.

Publish!, the how-to magazine produced by desktop publishers for desktop publishers, helped *Folio:* create dozens of seminars, roundtables, case studies, and user group sessions.



You'll gain insight into cost/benefit analysis of desktop publishing, the PC vs. the Macintosh, drawing and design tools, color systems, typography, scanners, and much more.

Show within a show.

Hundreds of desktop publishing products—hardware, software, peripherals—will be on exhibit in a special “show within a show.” Here desktop publishing applications come to life through hands-on demonstrations that illustrate and illuminate the benefits of this technology.

Be part of a bright idea. The Desktop Publishing Conference at The Folio:Show is your chance to learn more, see more, and do more in the desktop publishing field.

Call **203.358.9900** now for registration information and a complete program brochure. The Folio:Show convenes May 23-27, 1988 at the New York Hilton.

Macworld Best-Sellers

Months on chart	Last month	This month	Business Software
15	1	1	Microsoft Works <i>Microsoft</i>
27	3	2	Microsoft Excel <i>Microsoft</i>
35	2	3	Microsoft Word <i>Microsoft</i>
23	4	4	PageMaker <i>Aldus</i>
14	—	5	MacWrite <i>Claris</i>
13	5	6	SuperPaint <i>Silicon Beach Software</i>
3	—	7	Cricket Draw <i>Cricket Software</i>
30	7	8	MacDraw <i>Apple Computer</i>
2	—	9	Printshop <i>Brøderbund Software</i>
1	—	10	dBase Mac <i>Ashton-Tate</i>

Months on chart	Last month	This month	Education Software
19	1	1	Math Blaster <i>Davidson & Associates</i>
17	5	2	Typing Tutor III <i>Simon & Schuster Computer Software</i>
19	2	3	KidsTime <i>Great Wave Software</i>
3	4	4	Reader Rabbit <i>The Learning Company</i>
8	—	5	MacEdge II <i>Think Educational Software</i>

Months on chart	Last month	This month	Entertainment Software
15	2	1	Dark Castle <i>Silicon Beach Software</i>
19	3	2	MacGolf <i>Practical Computer Applications</i>
19	1	3	Flight Simulator <i>Microsoft</i>
1	—	4	Falcon <i>Spectrum Holobyte</i>
2	4	5	ShadowGate <i>Mindscape</i>

Months on chart	Last month	This month	Networking/Data Communications
15	1	1	TOPS <i>TOPS</i>
19	2	2	AppleTalk <i>Apple Computer</i>
11	3	3	AppleShare <i>Apple Computer</i>
3	4	4	PhoneNet <i>Farallon Computing</i>
18	5	5	MacServe <i>Infosphere</i>

Months on chart	Last month	This month	Hard Disks*
15	1	1	Apple Hard Disk 20/20SC <i>Apple Computer</i>
8	2	2	Macintosh Internal 20SC Hard Disk <i>Apple Computer</i>
8	—	3	Rodime 20 Plus <i>Rodime Peripheral Systems Division</i>
2	3	4	Rodime 45/45 Plus <i>Rodime Peripheral Systems Division</i>
2	4	5	MacStack 20 CMS Enhancements

Months on chart	Last month	This month	Add-in Boards
6	1	1	Apple 2MB Memory Expansion Kit <i>Apple Computer</i>
6	3	2	Radius Accelerator <i>Radius</i>
6	2	3	Apple 1MB Memory Expansion Kit <i>Apple Computer</i>
3	—	4	Video Board/Large Screen <i>Ryad</i>
1	—	5	Mac286 <i>AST Research</i>

Product Watch
Editors' choice: Other recent or forthcoming products of particular interest.
Datacopy Model 940 <i>Datacopy</i> 8-bit gray-scale scanner
Falcon Spectrum <i>Holobyte</i> multiuser game
Finale <i>Coda Software</i> music publishing software

Source: Exclusive InfoCorp survey of more than 125 Macintosh retailers and selected mail-order suppliers. Covers sales during January 1988.

* Does not include hard disks installed at the factory.

The Word is Out...

“Absolutely AMAZING word processing program. I want it WriteNow!”

**Robert Forras,
MacTimes**

“WriteNow feels perfect. ... It's hot. Highly recommended. This is THE word processor to use if you use a Mac.”

**John Dvorak,
San Francisco Examiner**

“Right now, WriteNow comes the closest to delivering on the promise of future word processing.”

**Michael Miller,
InfoWorld**

“This is the word processor that we designed and built Macintosh for.”

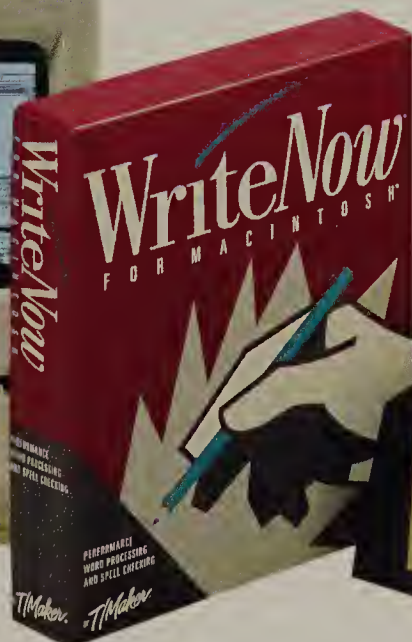
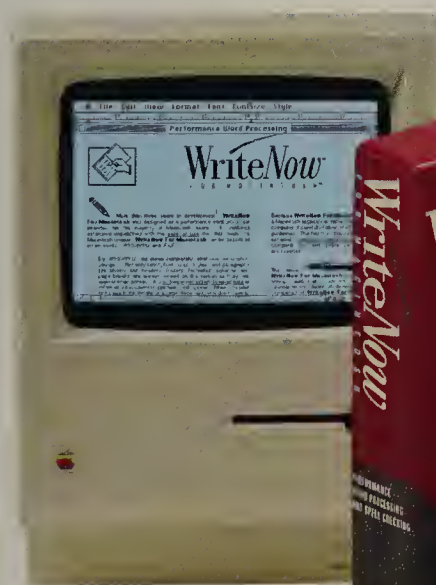
**Steve Jobs,
NeXT Inc.**

“T/Maker's WriteNow For Macintosh is a polished word processor that retains the elegance of MacWrite but adds features like multiple windows, footnotes, multiple columns, and a spell checker.”

**Dan Farber,
MacWorld Magazine**

“...WriteNow adds up to a great new word processor. ... its ease of use and speed put it way ahead of Microsoft Word and MacWrite for most jobs.”

**Vicky Jo Varner,
The MACazine**



Best New Word Processor
MacUser Magazine 1986

WriteNow
FOR MACINTOSH™

Performance Word Processing for the Macintosh

To learn more, see your local computer dealer today, or call or write to:
T/Maker Company, 1973 Landings Drive, Mountain View, CA 94043 (415) 962-0195

T/Maker®

Suggested retail price of WriteNow For Macintosh is \$175. Runs on any Macintosh.

T/Maker is a registered trademark of T/Maker Co. WriteNow is a trademark licensed to T/Maker Co.
Macintosh and MacWrite are trademarks of Apple Computer, Inc.

Circle 332 on reader service card

**Pagemaker 2.0 now
imports & exports
WriteNow
documents.**

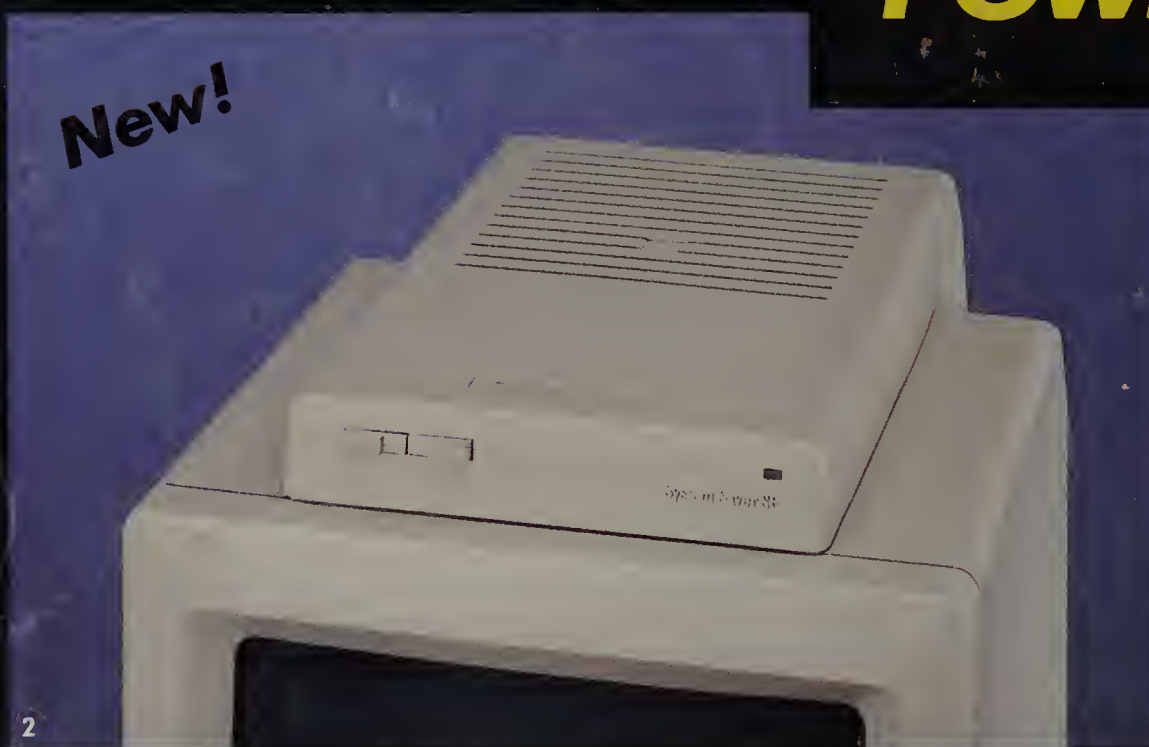
New!



He had a reputation as a power user. But deep down he knew it wasn't true. Oh, he had the software alright. But the real power, the electrical power that ran his Mac was another story. He lived in fear of its surges and spikes. He lacked the proper outlets. He knew he was out of control...

KENSINGTON POWER CONTROL

New!



A Kensington power center will get your power under control. We organize and protect your entire system with extra outlets, convenient front-mounted switches, and the best surge suppression and noise filtering available.

1. **Master Piece® Mac II** starts with five protected outlets. Added modem surge suppression protects against surges and spikes on the phone line. And a built-in swivel lets you adjust your monitor. \$159.95

2. **System Saver® SE** offers two protected outlets and a replacement for your SE's power cord, a choice of 1 or 2 switches, and modem/phone line surge suppression. \$79.95

3. **System Saver Mac** not only gets your power under control, it keeps your Mac or Mac Plus cool. Two protected outlets, a replacement power cord, a quiet fan, and a choice of 1 or 2 switches. \$99.95

For more information, call (800) 535-4242. In NY, call (212) 475-5200. Or write Kensington, 251 Park Ave. S., New York, NY 10010.



KENSINGTON™

© 1988 Kensington Microware Ltd.

Circle 11 on reader service card